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The purpose of this study was to describe the level to which a target work culture based on core organizational values was shared in one lumber manufacturing plant. The organization under study perceived that their culture was a source of competitive advantage and was key to their success in safety, product quality, and labor-relations. The organization had actively managed their culture through operations management and human resource policies. The study addressed three research questions (1) to what extent were the core values of the organization shared, (2) were there any inconsistent values, and (3) did organizational members perceive their culture as helping or hurting their plant's performance outcomes. The study found eight of the nine values were shared across the organization. The values of safety and customer satisfaction were strongly shared. The value of environmental stewardship was not apparent in the organization. The organization perceived that its culture helped the mill success in key performance outcomes by promoting teamwork, participation, and communication. For the values of communication, involvement, trust, and respect there were perceptions of inconsistency between the target culture's definition of the value and its actual practice. The study provides support that culture may have an influence on organizational effectiveness.

A Case Study of Organizational Culture in a Sawmill

by
Brian K. Chaney

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A Case Study of Organizational Culture in a Sawmill

Chapter 1--Introduction

Overview

A chipper breaks down in a Northwest sawmill. Two workers climb into the machine without locking out the power source, even though company policy requires employees to always lockout-tagout machines before maintenance repair. The workers know the rules but lockout-tagout procedures require extra time. They can fix the machine faster without following the safety process; besides, they believe that working quickly is what is valued at this plant. Yet someone starts the chipper by accident with the two workers in the machine. The two employees are seriously injured.

An employee walks out of a lunchroom without his hard-hat. When he gets to his workstation his fellow workers remind him to put his personal safety equipment on, even though there is no supervisor in the area. At this plant employees believe that it is their responsibility, as well as management's, to provide a safe work environment. Employees at this facility believe that everyone is a safety supervisor whether they own the company or are a new employee.

A production worker notices a quality control issue which is causing product down grade. Her job description does not require her to assess quality problems. She stops the production line even though it is extra effort for her. She lets the operators upstream know about the quality control problem. Instead of a reprimand for causing lost production, the worker is considered a hero for supporting product quality.

All of these situations depict worker behavior in a production facility. Although each deals with different aspects of manufacturing: safety, quality, and production, all share one common aspect. These situations depict different kinds of work behaviors that are explained by organizational culture. These examples operationalize work culture as norms that are embedded with values. The actions of these employees are related to their understanding of what is important in their organization.

Definition of Organizational Culture

Organizational culture is defined as the values, goals, attitudes, expectations, and norms of a specific organization's membership. (Pettigrew, 1979; Morley & Shockley-Zalabak, 1991; Greenberg & Baron, 1993; Trice & Beyer, 1993; Bowitch & Buono, 1994; Denison, 1990) An organization's collective culture provides the road map for member behavior. Culture encompasses which employee behaviors are appropriate, not appropriate, or are even possible in an organization. (Ott, 1989)

Organizational culture is often viewed as the justifications used for behavior; as such, many researchers argue that organizational values are the central component of culture. (Deal & Kennedy, 1982; Schein, 1985; Wiener, 1988; McDonald & Gandz, 1991; 1991a) Steven Ott (1989) defines organizational values as enduring beliefs that an organization holds that guide their conduct in all aspects of organizational life. James Bowditch and Anthony Buono (1994) further define organizational values, "...as the essence of the organization's philosophy for achieving success. They reflect the basic view of 'the way things should be' in a company that is shared by organizational members. A firm's philosophy provides a sense of common direction for its members

and guidelines as to acceptable behaviors in their daily operations." (p. 331) Organizational values then, are the justifications of employee behavior and provide the basis for employee action. (Barnett, 1988) The interconnection between employee behavior, values, and culture has led many researchers to represent an organization's value system as its culture. (Deal & Kennedy, 1982; Cameron & Quinn, 1999)

Culture as Communication

Organizational culture is often considered a communication phenomenon. According to Beverly Sypher, James Applegate, & Howard Sypher (1995), the study of communication focuses on the language, symbols, and expressions of participants. A workplace culture exists when people come to share a common frame of reference for understanding and interpreting organizational life. This common frame of reference is expressed and shared in the language organizational members use to describe their experiences. Communication both formally and informally is the medium through which these interpretations are shared and understood. (Daniels, & Spiker, 1987)

An organization's culture is communicated to its membership in many ways. First, culture is shared through the organization's informal interpersonal networks. Through interactions with long-time members, newcomers learn the new culture including language, appropriate behaviors, dress, and other culture elements. Second, cultural information is shared through formal and informal channels such as memos, reports, statements of company philosophy, and official policy. Third, interaction with external sources serves as a way culture can be communicated. The advertisements, announcements of new products, and other forms of public relations tells the public what

it would be like to be part of the organization. In addition, interpersonal interactions between the organization's members and outsiders provide another channel for communicating. (Barnett, 1988)

Importance of Organizational Culture

Researchers are interested in culture and values in particular because they have been linked to many organizational outcomes. For example John Michela and Warner Burke (2000), suggest that successful total quality programs hold certain key cultural values such as an emphasis on customer-driven quality, continuous improvement, communication, and teamwork. The assumption is that if employees hold certain key organizational values, the behavior to support high quality will follow. (Michela & Burke, 2000) Other researchers have found links between strong cultures which have a consistent set of values and higher financial performance. (Denison, 1990; Gordon & DiTomaso, 1992; Kotter & Heskett, 1992; Denison & Mishra, 1995; Petty, Beadles, Lowery, Chapman, & Connell, 1995) The assumption is that shared agreement about values, and thus culture, serves as a unifying theme in organizations that allows for coordination of action and group direction. Still other researchers have found relationships between human resource issues and organizational culture such as increased employee retention (O'Reilly, Chatman, & Caldwell, 1991), organizational structure (Zammuto & O'Conner, 1992) and increased commitment (Virtanen, 2000). Based on these types of connections, understanding the role of values in organizations and thus the culture holds the promise of uncovering keys to successful management.

The implications of organizational culture have generated a great deal of management attention. In an attempt to gain a competitive advantage in the marketplace, many organizations have focused on their workplace culture. The management of culture has taken the form of elaborate operations management and human resource policies. To develop effective work cultures, many firms have used extensive employee selection techniques, implemented socialization processes, and embraced training opportunities for employees. Through these processes, organizations hope to generate a competitive advantage in their markets by developing optimal internal work cultures. As a result, some organizations claim that their culture is a source of economic success, and as a consequence they are continuing to implement human resource strategies to produce target work environments.

These human resource strategies are often focused on creating strong cultures that have highly shared values and a deep understanding of the organization's goals. A high congruence between the organization's espoused values and its membership's values is assumed to improve commitment and lead to increased organizational effectiveness. Reviewing the concept of strong culture, Andrew Brown (1995) points out two arguments for the adoption of practices to generate strong culture. First, strong cultures are claimed to facilitate goal alignment. Goal alignment is assumed to makes coordination of activity easier and lead to high performance. Second, strong cultures lead to higher employee motivation. If employees have value congruence, they are more likely to participate and support the organization. In contrast, weak workplace cultures do not share a value set. These cultures would be characterized by competing values that work against the organization's goals. (Deal & Kennedy, 1982)

Research Problem and Justification

If organizations turn to culture as a means to improve effectiveness, more research will be required to understand what constitutes a work culture and how it is related to organizational outcomes. One organization that had focused its attention to managing culture was the Coos Bay Export sawmill (CBX). The CBX Sawmill started in 1989 and was developed from a previous operation that had recently closed. Because the previous mill had a long history of labor-management conflict, the new management set out to develop a work culture rather than let one develop as a natural consequence. Prior to its closure due to market conditions in 1998, the CBX mill had achieved a high level of success in terms of safety, quality, and labor relations. Key to their culture management was the development of a mission statement and a set of core values that was to characterize the organization's culture.

Since the start of the CBX operation, the mill had been recognized as a company and industry leader in safety, product quality, labor relations. This operation had received company-wide recognition for its safety record. The mill reported that its customers considered CBX to be one of the top metric lumber producers in the world. In contrast to the labor relations system at the old mill where grievances and contract disputes were common, there had been only one grievance in the life of the new organization. The organization had attributed these outcomes in large part to its work culture. (*Building the Champion*, 1995)

Before the process of developing a work culture could be investigated, the work culture itself had to be determined. Although this organization claimed to have a strong work culture integrated around its core values, CBX did not have a direct way to assess

the extent that the target culture was shared among the plant's membership. This raised an empirical question concerning the level to which the target work culture was shared within the organization. Prior to the plant closing, this researcher had an opportunity to study this organization. The researcher had previously worked in the CBX operation as a summer college helper and had a family member that worked for another Weyerhaeuser operations in the local area. The researcher's work experience at the mill provided a basis for obtaining permission for conducting this study. The focus of this research was to address the empirical question stated above by describing the extent that core values were shared within the organization and determining any inconsistent values. The study also addressed the extent to which organizational members perceived that their culture explained their organization's success in terms of safety, quality, and labor-relations

Study Overview

This study focuses on an empirical question concerning the level to which a target work culture based on core organizational values is shared in one lumber manufacturing plant. This study addresses three research questions. First, to what extent were the core values of the culture shared across the organization? Second, were there any inconsistent values that were in conflict with the target culture? Finally, did the organization's membership perceive their work culture helped or hurt the mill in relation to performance outcomes?

The population for this study was defined as full-time manufacturing employees, supervisors, and management personnel at CBX. The population was stratified by work shift, department, years of service, and job classification to allow for analysis of possible

subcultures. Open-ended interviews were used to determine members' perceptions of the culture and to elicit organizational values. Each interview was audiotaped. From these interviews, content analysis was used to assess the frequency and favorability of each value.

For each value, an analysis of variance was conducted across sub groupings to determine if a statistically significant relationship existed within and between possible subcultures. In addition, Joanne Martin's (1992) culture framework was employed to analyze responses from interviews to qualitatively assess the extent that each value was shared across the culture. Content analysis was also used to categorize responses to questions concerning members' perceptions of the relationship between their culture and performance outcomes.

Thesis Overview

This thesis contains five chapters. Chapter One provides an introduction to the research, the research problem, and a study overview. Chapter Two is a literature review of the relevant research and a history of the organization under study. Chapter Three describes the research method including the design of the study, population studied, the methodology applied, and analysis procedures employed. Chapter Four provides the results of the study and the analytical assessment of the data. Chapter Five provides a discussion of the data analysis and implications for further study.

Chapter 2--Review of Literature

Overview

The concept of organizational culture is not new but its articulation and development as a coherent approach is a recent phenomenon. The components of organizational culture are deeply rooted in previous organizational theory. Ott (1989) notes that the history of organization studies has been an evolution of approaches and perspectives. Organizational theory has advanced new conceptual frameworks from the classical view focused on the one best way to manage to recent contingency models that take a wider approach to organizational elements. This chapter places organizational culture in the context of organizational theory and explicates the different streams of research focusing on the definitional and methodological differences. This chapter also provides a history of the organization under study.

Organizational Culture in Context of Organizational Theory

Chester Barnard (1938) provides one of the earliest connections to organizational culture and the role of communication in organizational processes. Barnard does not use the term culture but he does refer to the concept of "organizational personality." Organizational personality is the "...private code of morals that derives from a definite formal organization." (p. 270) Barnard was one of the first theorists to acknowledge the role of values in organizational settings. According to Barnard, the chief role of management is to communicate a value system throughout an organization.

Communication serves as the message conduit for developing cooperation among organizational members.

Barnard articulates several components of organizational culture. First, Barnard moves beyond formal structure and argues that the informal structure affects behavior. Second, Barnard's work indicates that values are required for behavior justification. Third, Barnard's work acknowledges interpersonal relationships and their impact on communication networks and organizational interaction. Fourth, Barnard emphasizes the value of executive leadership and its role in organizational effectiveness. Barnard believes that the chief executive must set the values and moral codes of an organization. (Ott, 1989) This notion can be found in recent culture research which suggests that culture leaders set the boundaries of organizational culture. (Eisenberg & Riley, 2001; Smith & Eisenberg, 1987; Siehl, 1985; McDonald, 1991; McDonald & Gandz, 1991)

In the context of organizational studies, the term culture may have its first appearance with Elliott Jaques' (1952) book The Changing Culture of a Factory. Jaques defines culture as the "...customary and traditional way of thinking and of doing things, which is shared to a greater or lessor degree by all its members, and which new members must learn, and at least partially accept, in order to be accepted into service in the firm." (p.251) Jacques further explains, "The culture of a factory consists of the means or techniques which lie at the disposal of the individual for handling his relationships, and on which he depends for making his way among, and with other members and groups." (p. 251) Jaques' definition shares similarities with current organizational culture views. His work identifies culture as containing attitudes and values, and "less conscious conventions." Jaques also implicates socialization as a component of culture change. He

acknowledges the use of culture as an informal control device and suggests that culture serves as a "sanctioning process" for authority.

Besides Barnard and Jaques, Philip Selznick (1948) provided an early connection to organizational culture. Selznick researched the significance of values, norms, and goal congruence to organizations. These theorists provide the early articulation of organizational culture. The contributions of these theorists challenged the classical view that there is one best way to organize. These new approaches gave reason to believe that specialization and division of labor may not be the only tools for optimizing production. Finally, although organizations have economic goals they may also exist to meet other needs. (Ott, 1989)

Although these theorists provide the canvas for organizational culture, it is human relations theory that starts to provide depth and color to the concept. Human relations theory turns to the social side of organizing and assumes that satisfied and involved employees are productive. While it encompasses a range of research streams, there are three underlying assumptions. First, people are viewed as the most valuable resource in the organization. Second, interpersonal relationships provide the basis for organizational structure. Finally, self-actualization for the average member is linked to their identification to the organization. (Andrews & Herschel, 1996)

Important to the theoretical background of the human relations school is the work of Fritz Roethlisberger and William Dickson (1946). Their work on the Hawthorne studies provides a link between human elements and motivation. The Hawthorne studies intended to assess from a Tayloristic point of view how the impact of changing working conditions affected productivity. The researchers found that regardless of improving or

worsening the work environment productivity increased. This was a shocking result at the time because this was in direct opposition to accepted scientific management theory.

Elton Mayo (1945) claimed that productivity increased because the programs improved the morale of the subjects who participated. Three factors appear to have contributed to worker morale. First, employees viewed themselves as important and special to management because they were asked to participate. Second, the subjects developed strong interpersonal relationships with their superiors. These relationships were strengthened by the autonomy granted to employees to plan their work pace. Finally, through interaction and group dynamics, employees developed a "pleasant work environment" that facilitated teamwork. (Mayo, 1945)

Researchers found that production norms existed within the groups. Workers developed informal rules that brought all workers within the group's interpretation of a "fair day's work." These norms were more powerful than wage incentives. The Hawthorne experiments validated the role of norms as explanations of behavior. In addition, the existence of informal structures and rules was confirmed. (Bowditch & Buono, 1994)

Another human relations theorist, Douglas McGregor (1960) argues that a manager's basic assumptions about people serves as the guiding force behind how he or she approaches managing organizations. Assumptions about human nature are organized on a continuum with theory X on one end and theory Y on the other. Theory X characterizes traditional or classic views of organization while theory Y represents the human relations' approach. Theory X argues that people generally are not concerned with organizational needs. Managers must control employees to achieve organizational

goals. Theory Y suggests that people generally want to be involved and responsible for organizational success. Managers must create the appropriate environment to allow people to meet their full potential. To improve organizational effectiveness, the basic assumptions held by managers about human nature must be changed from theory X to theory Y.

Like McGregor, many organizational culture researchers have focused on the basic assumptions people have about human nature. For Edgar Schein (1985) the pattern of basic assumptions shared among a group is its culture. From this view, assumptions are the deepest form of organizational culture and represent the "taken for granted" values of the group. Unlike McGregor, Schein views these assumptions as unconscious. These basic assumptions frame, at a cognitive level, an organization's relationships and guide member behavior. Schein (1985) points out, "To really understand a culture and to ascertain more completely the group's values and overt behavior, it is imperative to delve into the underlying assumptions, which are typically unconscious but which actually determine how group members perceive, think, and feel." (p. 3)

The human relations school laid the groundwork for organizational culture inasmuch as its theorists acknowledged the importance of non-economic motivations. Human relations theorists provided empirical linkages between values, assumptions, norms, and other elements of culture to patterns of behavior. This theory also acknowledges the informal aspects of organizations and the power individuals have on organizational performance.

Organizational Culture Literature

The organizational culture literature includes a vast number of approaches and applications. The interdisciplinary nature of organizational culture allows for many different perspectives to emerge. Although disagreements exist over the definition of culture and how it can be meaningfully examined, each perspective offers a different lens for investigating organizational behavior and the implications of culture for organizations and their members.

Organizational culture is operationalized in business and organizational studies in a variety of ways. Culture is often defined as a range of variables or organizational elements. Definitions of culture include "holistic" clusters of variables including value systems, behavioral norms, goals, and expectations. (Sackmann, 1990) A careful review of the literature suggests two conceptual frameworks for understanding and categorizing organizational culture research: 1) the functional and interpretative paradigms and 2) Martin's (1992) three perspectives of organizational culture.

Functionalist versus interpretative paradigms

A review of organizational culture literature by Linda Smircich and Marta Calas' (1987) suggests that there are two fundamental paradigms operating in the culture literature: the functionalist and the interpretativist. Adopted from Daniels and Spiker (1987), Table 2.1 is illustrative of the basic differences between these two paradigms.

Table 2.1
Comparison of functional versus interpretive approaches

	Functional	**Interpretive**
Goals	Develop and change organizational culture to produce organizational effectiveness	Describe and criticize organizational culture according to the meanings that it makes possible to members
Definition of Culture	Artifacts of the organization	Common interpretive frame of reference; a network of shared meanings
Activities	Promote managerial control over cultural artifacts through management of symbols	Study meanings and themes in members' organizational sense making, as revealed in symbolic discourse

Source: Adopted from Daniels & Spiker (1987)

The functionalist perspective assumes that organizational culture is a variable that an organization possesses. As a variable, organizational culture can be created, maintained, and changed. The functionalist researcher is concerned with how to manage culture to improve effectiveness, productivity, and employee morale. The functionalist approach focuses on discovering the right combination of organizational variables to produce effectiveness. The functionalists view manifestations of culture as concrete and observable. Often, researchers will study structure, technology, leadership, communication and cultural artifacts such as narratives and rituals. This approach studies these variables in the same manner that they would study other observable features of organizational behavior. (Daniels & Spiker, 1987)

The functionalist perspective studies communication as both a message network for transmitting values, goals, attitudes, and other culture elements and as an integrating mechanism for shared understanding and meaning among organizational members. Functionalist researchers want to understand how symbols and other cultural elements communicate culture and thus sustain or change culture. Consequently, although some research seeks to describe culture, most focus on predicting human behavior. The relationship between culture and communication is conceptualized as causal. (Martin & Nakayama, 1999)

The interpretativist approach conceives of culture as the central element of an organization. An organization does not have a culture but rather it is a culture. This research studies the interaction processes which organizational members use to negotiate meaning from daily occurrences. Interpretivist studies of organizational culture emphasize negotiated meaning, normative shared meaning, and symbolic discourse. The purpose of interpretativist research is to provide rich explanations of organizational life. (Smircich & Cala, 1987)

For the interpretativist, communication is central to organizing. The interpretativist is interested in how meaning is generated in an organization and how it limits and makes possible activities for its members. Culture in this sense is performed or enacted through communication patterns. Thus interpretativist research is interested in describing the patterns of meaning in organizations that is organizational life. (Pacanowsky & O'Donnell-Trujillo, 1982)

Although these two approaches differ significantly, they do share some common goals. First, both functional and interpretative approaches seek to understand people's

subjective perceptions of culture. The functionalist wants to study these experiences to understand the relationship between perceptions of culture elements and performance. The interpretativist studies these perceptions to understand how an organization is constructed from the shared meaning of its members. Second, both camps want to reduce systemic distortion of organizational communication. For the functionalist, systemic distortion is filtering of information. For the interpretativist, systemic distortion is communication that is blocked or manipulated to serve certain organizational interests: management, departments, and subgroups. Finally, both approaches seek to uncover new ways of looking at organizations through culture. (Daniels & Spiker, 1987)

Integration, differentiation, and fragmentation perspectives

Martin (1992) describes three perspectives of organizational culture. Each view offers a distinct approach for understanding culture. She suggests that these approaches resemble paradigms inasmuch as they represent theoretical views of culture which guide research and direct empirical questions.

The first perspective, integration, assumes that culture is a common set of elements that is shared throughout an organization. The common elements that are most frequently used to define integration are shared organizational values. Four characteristics define this approach. First, the notion of shared or consistency of culture elements across the organization is central. Second, there is consensus among members about the meaning of the cultural elements. Third, most integration studies focus on the founder or leader as the source of culture. Finally, because of the wide consensus that exists in such cultures, change requires a revolution rather than a gradual evolution to

replace old values with new ones. Martin notes that this is one of the most widely held beliefs by managers about culture. Martin also suggests that researchers focusing on this aspect of culture tend to look for relationships between cultures with high levels of homogeneity (strong cultures) and organizational performance. (Martin, 1992)

The second perspective is differentiation. In contrast to the notion of consistency of culture advanced under integration, differentiation presumes the existence of subcultures. Martin (1992) notes that subcultures, "...co-exist, sometimes in harmony, sometimes in conflict, and sometimes in indifferences to each other." (p. 83) The differentiation perspective acknowledges that people in organizations perform different roles. These roles vary in their degree of obligations and rewards. Thus people fulfilling these roles in their organization may have different interests and motives. (Martin, 1992) This perspective does not dispute the existence of shared organizational wide culture elements, rather it emphasis that subgroups within the organization can develop separate cultures or advance certain cultural values to promote their interests. (Kilduff & Corley, 2000) Still organizational members must cooperate to some extent or the organization can not function. Thus there are degrees of differentiation. Researchers from this view focus on the relationships and conflicts between subcultures.

The third perspective is fragmentation. With integration there was homogeneity of cultural elements at a macro level. The differentiation perspective acknowledges consistency of culture elements at the micro level with subgroups. Unlike the above perspectives, fragmentation assumes that values and beliefs are continually changing within an organization. Cultural values are issue-driven and are short-lived as coalitions form and disband. (Martin, 1992) Martin notes, "To the extent that consensus exits, it is

issue specific and transient." (p. 380) Researchers from this viewpoint are interested in the multiple interpretations of culture elements. Martin Kilduff and Kevin Corley (2000) provide an example of how fragmentation may operate in an organization. They note that within an organization the value of honesty may be supported, but people may have differing interpretation of the value in action. In their example, an individual accused of insider trading may view it as simply initiative and within his or her understanding of honesty while others may see their behavior as dishonest. (Kilduff & Corley, 2000) It is these different perceptions of culture that researchers from the fragmentation perspective are interested in understanding.

Culture as effectiveness

Organizational culture is often perceived as a key element in successful organizations. One might ask to what extent this claim is true? Researchers have built a body of evidence to suggest that culture is linked to performance in organizations. In this section, the literature review of the culture-performance relationship is reviewed.

Thomas Peters and Robert Waterman (1982) were one of the first to claim that organizational performance was related to work culture. Looking at case studies of successful organizations, they concluded that strong cultures that focused on adaptability and human relations had higher financial performance than organizations with cultures that emphasized only technical orientations. Similarly, Terrence Deal and Allan Kennedy (1982) claimed that shared values would lead to high organizational performance. They reasoned that organizational values function as an informal control system that shows employees what was expected of them. Organizations with strong

cultures or highly shared values would have the advantage of increased coordination of action. The authors believed that people would work harder if they knew the goals of the organization and were highly committed to its success.

Reviewing organizational culture, Alan Wilkins and William Ouchi (1983) reason that culture functioned as a form of management and for some organizations culture could increase performance. Using a transaction costs perspective, the authors look at three modes of governance: markets, bureaucracies, and clans. Organizations are defined by a set of actions that involve exchanges between individuals in which each party gives something of value and receives something in return. Based on this point of view, they investigate which governance mode would be most efficient under varying exchange conditions. The market form of governance assumes a competition between parties over a fair price and fulfillment of commitments with the market and competition mediating a fair price. Bureaucratic forms of governance function by creating an employment contract. Employees contract to receive wages in exchange for submitting to supervision. Finally, the clan functions by socializing parties in such a way that through, self-interest, they see their objectives as aligned. A high level of goal congruence and some general shared paradigm is required to have this form of governance. For the authors, shared goals are defined as shared values. Wilkins and Ouchi conclude that the clan form of governance offers the most efficient means of management. Clans have the advantage of not needing supervision because employees are committed to the organization.

Jay Barney (1986; 1996) also reviews the culture-performance relationship investigating the connection between culture and sustained superior financial

performance. Barney defines culture as a strong set of core values that define the way business is done. Normal economic performance is defined as a rate of return on a firm's assets that is just large enough to keep a firm engaged in its current activities. Superior economic performance is a rate of return greater than a normal return and indicates that a firm is prospering. In order for culture to lead to superior economic performance, it must enable a firm to do things and behave in ways that lead to added financial value. In addition, a strong culture must be rare and difficult to imitate. Otherwise other firms would simply adopt positive culture practices, and all firms with only strong culture would return normal economic returns.

Barney concludes that it is likely that firms will not be able to manage culture to achieve superior financial performance in the long-run because if one firm can alter its culture another could also. This reasoning suggests that if one firm can modify its culture to improve its performance, then other firms can adopt such modifications as well. Thus only normal economic returns would be possible overtime. Sustained superior financial performance is only possible for firms that have cultures that are generated by unplanned means and thus can not be copied.

Barney does not consider in his analysis other barriers that might prevent a firm from copying culture management practices to achieve superior financial performance. Not all organizations have the same level of capital and human resources. So, the cost of implementing human resource policies to gain strong cultures may prevent some organizations from imitating practices found in other firms. In addition, the implementation of practices to create strong culture likely requires a special skill set in the organization's work force. Firms that are able to recruit those employees that best fit

the culture would likely be more successful in implementing a culture change. These barriers to implementing culture change suggest that firms can not just adopt culture practices. In contrast to Barney's position, some firms would have more resources available and better-suited personnel to implement culture management and thus achieve sustained superior financial performance.

Daniel Denison (1990) claims that a culture that is highly adaptable to the external environment creates high employee involvement and has widely shared organizational values. Thus leading to greater organizational effectiveness and higher financial returns. For Denison, effectiveness is a function of the values and beliefs of the organization and the extent that they are shared. He offers four hypothesizes in his study. First, Denison hypothesizes that consistency of values, which are widely shared, will have a positive affect on an organization's ability to reach consensus on decisions and ultimately coordinate actions. Denison argues that culture functions as an "implicit control system" that is based on the organization's internalized values. This system will be more effective for achieving coordination than external control systems that rely on formalized rules and regulations. He further argues that shared meaning will have a positive impact because an organization's members will all be working from a common framework of values and beliefs that form the basis through which they communicate. Because communication is a process of symbol manipulation, then a high level of agreement about the meaning of each symbol will greatly enhance the encoding and decoding required for communication. Thus a strong culture having these attributes will have a greater potential for implicit coordination because it facilitates the exchange of information and coordination of behavior.

Second, Denison advances the hypothesis that cultures that have high levels of involvement and participation will have higher levels of effectiveness. He reasons that involvement creates a sense of responsibility and ownership by organizational members. From a greater sense of ownership a higher level of commitment is generated which decreases the need for bureaucratic control systems. Third, Denison hypothesizes that a strong culture that is highly adaptive will increase organizational effectiveness. To be highly adaptive, a culture will need to perceive and respond to changes in the external environment such as changes in customers, government regulations, and other issues. The culture will also be able to respond and change as internal issues arise. Finally, Denison advances the hypothesis that a culture with a defined mission will be effective. He argues that a shared definition of the purpose and function of the organization will give its membership direction and clarity.

To test his assertions, Denison looked at 34 firms across 25 different industries. To assess the involvement, consistency, adaptability, and mission hypothesizes, survey data were gathered using the Survey of Organizations (SOO) and the Organization Survey Profile (OSP) questionnaire. To investigate the performance relationship, Denison reviewed financial data over a 6 year period of time for each firm which included: return on sales, return on investment, income/ sales ratio, and income/ investment ratio.

Denison's approach was to look at the differences in performance over time between those companies that had a particular type of culture and those that did not. Denison found that consistency is positively related to short-term performance but was negatively related to long-term performance. He explains that one possible explanation is

that strong culture through implicit coordination helps in the short-term for performance. Over time such a culture can restrict innovation and reduce the options available to the organization. These options will be needed to react to changes in the organization's environment; high consistency can resist this process. Denison also found that involvement is positively related to short and long-term performance.

In a follow-up study, Daniel Denison and Aneil Mishra (1995) continued to test the connection between cultures of involvement, consistency, adaptability, and mission with performance. They studied responses from 764 managers in five different industries. They found that all four elements of culture were positively related to return on assets. A shared understanding of the organization's mission showed the strongest predictor of performance. Involvement and adaptability were found to be predictive of sales growth.

George Gordon and Nancy DiTomaso (1992) also studied the strength of culture as a predictor of organizational performance. Using a questionnaire, the researchers sampled 850 managers in eleven insurance companies. The researchers investigated the relationship between financial performance and culture strength as measured by consistency of responses to the cultural values of adaptability and stability. Similar to Denison (1990), the researchers found that a strong culture as measured by consistency of perceptions of company values was predictive of short-term performance. They explained the results by noting that a consistent perception of organizational values would allow managers to act similarly in similar circumstances. This congruence may improve performance because it indicates that the company has chosen a policy. The

researchers point out, that even if culture strongly influences organizational performance, over time outside influences could impact long-term results.

Based on the results of Denison (1990) and Gorden and DiTomaso (1992) it appears that culture only has a short-term impact on performance outcomes. John Kotter and James Heskett (1992) in contrast, suggest that culture can have a positive long-term impact on organizational performance. Kotter and Heskett studied responses from 600 managers across 207 companies in 22 different industries. The researchers looked at strength of culture as a predictor and measured performance based on an average yearly return on investment and yearly increase in stock price over an eleven-year period of time. They found evidence to suggest that there is a positive relationship between culture strength and long-term economic performance.

M. M. Petty, N. A. Beadles, Deborah Chapman, Christopher Lowery, and David Connell (1995) also investigated the empirical relationship between culture and performance. To measure culture, the researchers developed a survey instrument based on the core values of one organization. The survey measured key culture elements such as trust, quality, innovation, teamwork, service, and dignity. The survey was administered to 884 employees across several subunits in the organization. Performance data were gathered for two fiscal years on all subunits. A summary of five objective measures of performance was developed: operations, customer accounting, support services, marketing, and safety and health. The quantitative measures of these components were converted to a scale. A positive relationship was found between trust, credibility, and performance. Teamwork was found to be significantly associated with

higher performance. This study indicates that there is a relationship between culture and performance. The strongest indication is for a link between teamwork and performance.

In conclusion, there is evidence of a link between culture and performance. As noted above, there is evidence that strong cultures have an impact on performance in the short-run. Follow-up studies have further indicated that culture may also impact performance over time. Still, there are many gaps in the literature. Celeste Wilderom, Ursula Glunk, and Ralf Maslowski (2000) point out four conclusions from the literature. First, the conditions under which culture leads to high performance still need to be flushed out and understood. Second, methodological development of standardized measures is required. Third, a more widely accepted definition of culture is needed to continue building theory. Finally, better methods of assessing performance are required to better assess the relationship.

History of Organization

Coos Bay Export (CBX) was the organization under study. A history of this operation will provide a context for understanding its work culture. The CBX mill was a medium-sized lumber producing manufacturing plant located in Coos Bay, Oregon. The mill was part of Weyerhaeuser, a large forest product corporation. It was one of six mills that produced softwood lumber in the Northwest for the company. This mill produced metric Douglas Fir products for export to target markets in Japan and Europe. The mill's annual volume was 100 million board feet of lumber. (*CBX Tour Book*, 1995)

The company had maintained a presence in the Coos Bay community since the early 1940's. In 1944, Weyerhaeuser announced plans to build a lumber manufacturing

facility in the North Bend-Coos Bay area. (Douthit, 1981) The plant started operation on May 1, 1951, and over time became a world leader in lumber production. According to Art Smyth (2000) lumber production was so great that the community earned the title of the "world's largest lumber port." By 1962 the company was the largest employer in the area and had a payroll of 6 million dollars. The company employed over 1000 people between the mill and the woods operations. In 1963, the first automated Douglas Fir plywood plant was added to the sawmill complex. The mill was considered a technical marvel at the time. (Smyth, 2000)

In the 1980's, the Weyerhaeuser mills in the area went through a time of transition. The plywood mill was closed permanently in 1984 due to market conditions. In November of 1988, the company announced that the second shift of the sawmill would be curtailed in January of 1989. (Smyth, 2000) The old mill was designed for an old growth economy and was not well suited for the second growth logs that were now available. (Dickey, 1997) Jack Taylor, the Coos Bay Operations Manager, commented on the curtailment by pointing out, "We're facing an overall change in the nature of our raw material base. It's transition from an old growth economy to a second growth economy." (*Weyco Buys Mill*, 1989, p. 2) In reporting on the curtailment, the local newspaper noted that, "Company officials have said for sometime that the North Bend Mill [old mill] would face closure or retooling at the end of this decade." (*Last Logs Cut*, 1989, p. 2)

According to Smyth (2000), by the start of 1989, it was apparent that the facility's equipment was obsolete in relation to the available raw material, and continued operation was not viable. In January 1989, the company announced plans to permanently

close the facility. On March 4, 1989 the last log was run through the mill. The plant had run for 38 years and at its peak it employed over a thousand workers.

After the company closed the old plant, plans were made to open a new sawmill facility in the area. Rather than retool the existing plant, the company purchased an idle cedar mill from Menasha Corporation. The facility closed due to the lack of cedar logs. After purchasing the mill, Weyerhaeuser redesigned the complex to cut metric Douglas Fir products for the Japanese post and beam market. In the company press release at the time, Jack Taylor, the operations manager, stated, "We view the CB Cedar [the future CBX mill] facility as our mill of the 90's. With some modifications we can efficiently produce high quality, high value finished lumber products to serve the emerging Japanese lumber market." (*Weyco Buys Mill*, 1989, p. 1)

The new mill started operation in April of 1989. At startup, the mill employed 75 workers, in contrast to the 200 employees that worked at the old mill in its last few years. All former employees were given a chance to put in applications for the new mill. The company said that previous employment would be considered in the process. But as Smyth (2000) notes, with the smaller workforce at the new mill, the company was "picking the best of the crop." Even with the downsizing, Weyerhaeuser continued to be the biggest employer in the Coos Bay Area. (Smyth, 2000) After startup, the CBX mill went to two shifts within a month of operation. In March of 1991, the mill added a third shift to meet market demand. (*CBX Tour Book*, 1995)

The CBX mill represented two major changes from its predecessor. First, the mill was one of the few operations in the industry that focused solely on the export of finished products. (Smyth, 2000) Second, the mill was designed from the beginning to have a

work culture that supported safety, positive labor-management relations, high quality, productivity, and communication. This stood in contrast to the old mill that had a long history of an adversarial relationship between the company and union. (Dickey, 1997)

During its life, the CBX mill was a leader in safety, labor relations, and quality. The mill received company wide recognition for its safety record. It had won the top safety mill award for the Western Lumber Business five out of the six years that it was given out. According to the mill, CBX was considered to be one of the top metric lumber producers by its customers. In addition, over the plant's history there had been only one grievance filed. (Dickey, 1997) Asking one employee what made him proud of CBX, he responded, "I think our safety record. We have a million man-hours now [no lost time injury]. Sawmilling is dangerous work. There's no question; it's dangerous work." The participant continued, "I think our product is excellent. Anybody that comes here to visit and knows lumber walks out and goes 'Wow. This is nice-looking lumber.' "

On January 13, 1998, the CBX mill was permanently closed. Although the CBX mill had been very successful in many respects, it could not survive the dramatic changes in the export lumber market experienced in the late 1990's. The mill was designed to cut metric products primarily for the Japanese housing markets. In 1998, the Japanese economy was in a depression and housing construction had dropped significantly. Japanese construction practices were also changing from a post and beam construction to more western style housing which used dimension lumber. The advent of laminated and prefabricated beams also offered cheaper substitutes in the market. The closure of the sawmill was followed by the closure of several other Weyerhaeuser operations in the local area. (Smyth, 2000)

Structure, technology, and culture

The work culture and organizational structure of the new and old mills differed greatly. Although the two mills shared a common manufacturing process for breaking down logs to lumber, they vastly differed in their approaches to operating technology and labor relations.

The old plant fit Joan Woodward's (1965) description of large batch production. Work was organized into an assembly line structure. Products were standardized and produced in mass quantities. Although orders were filled for particular customers, most products were sold on the open market. This mass production technology benefited from economies of scale generated by the large volumes of lumber.

As Woodward (1965) would predict, high differentiation and formalization characterized the organizational structure. Job classifications were differentiated and specialized. According to one participant that had worked in the old mill, "Back in the old mill we had a classification for every job and work boundaries were very defined. For example in maintenance, we had pipe fitters, welders, carpenters, painters, and millwrights." Policies were standardized and the mill adhered to a strict division of labor. Decision-making was centralized, and there was little delegation of authority. The primary communication channel was through the superior-subordinate relationship, with most communication flowing from the top-down. There was little employee involvement in the decision process. (Dickey, 1997) One employee remembered the decision-making process in the old mill, "All ideas for any kind of improvement or anything were generated from the top-down. The employees had absolutely no say in what was going on. Either you agreed with what was happening or you left."

The social system of the old plant characterized a "traditional" work environment. According to Sam Dickey, a former lumber superintendent at the plant site, this work culture pitted employees and managers against each other; as a consequence there were as many as 60 grievances filed every month. Dickey (1997) noted in reference to the old mill's work systems:

> I'd seen systems that weren't working well: management against labor, labor against management. I don't have anything against the union; both sides were equally at fault. In fact, perhaps management was most at fault because our systems weren't perceived as fair. The skill level of some of our supervisors was low. I had been a spokesman for the company on occasions when we'd gather 1,000 people at the sawmill and plywood plant and we'd deal with up to 60 grievances a month. Most of them were a waste of time. It came from a very 'we/they,' 'us vs.them' mentality.

According to Michael Duane (1993), grievance activity is often described by the grievance rate (the number of grievances filed per 100 employees per year). The size of the old mill's workforce fluctuated over the life of the operation. The researcher did not have access to the old mill's grievance records. Based on the interviews, at the height of the old mill's grievance activity, there were 1,000 employees and an average of 60 grievances per month. The grievance rate for the old mill was calculated based on this information. The grievance rate for the old mill was calculated to be 7.2 grievances per 100 workers.

The grievance rate provides a standard for assessing how the old mill's grievance activity compared to its industry. Brian Bemmels (1993) studied grievance rates by industry from a survey conducted in 1990. Looking at 26 forest product related bargaining units in Canada, he reported that they averaged a grievance rate of 11.7. This rate suggests that the old mill grievance rate was not particularly high in comparison to

similar wood products operations. Reviewing manufacturing organizations, including forest products, Bemmels found a grievance rate of 15.4 per 100 workers. This rate included 229 bargaining units. These two rates suggest that the grievance rate of the old mill was not high in comparison to some other similar forest product operations and manufacturing organizations. Still, the management of the new CBX operation considered the previous mill's grievance activity to be to high and desired a change from the old plant's labor history.

A series of conflicts marked the history of the old plant and created an adversarial labor-management relationship. Trust was a major issue between the company and the union. One supervisor remembered, "It was certainly a 'we/ they' type situation, and the union was the middleman between the employees and management. There was very little trust from employees towards management, and not much respect from management towards employees." He further notes, "It really was a semi-adversarial relationship. There wasn't the ability to work through simple issues particularly the emotional ones." An employee who worked at both mills noted a comparison between CBX and the old mill:

> There's more trust employee to employee, management to employee, and employee to management. There is more trust overall. I think it's because they started over. Everybody that came here went through a job interview. I worked at the other plant for approximately eleven years and I had to go through a job interview to get this job.

The new plant was opened with a new organizational strategy explicitly focused on culture management. One supervisor remembered, "When we started CBX, we spent many months thinking about the culture that we wanted to have at CBX and developing

plans that would insure that we would have a change in employee attitudes." During those initial meetings, management discussed the core issues surrounding successful operation at the new plant. One issue was the selection of a different market base. Dickey (1997) remembered, "We made the choice to select targeted customers, that was the export market in Japan for the metric quantity in demand. We went away from a kind of commodity logic used in the old mill." The new target market focused on a narrow set of customers and required highly specialized quality and production skills. This was a change from the large range of markets previously served by the old mill. The new mill would focus on as few as eight customers in contrast to the two thousand customers that the old mill had served. (Dickey, 1997)

The new target markets yielded high profit returns but demanded high standards of quality. To meet the quality control needs of the customers, CBX's production technology was to be a batch process focusing on product specialization and customer specifications. The mill's management perceived that they needed a workforce that was flexible, customer focused, and able to make floor decisions about product quality. They perceived that this type of workforce would allow the plant to successfully compete in their target markets and thus make it profitable to invest in a culture change effort.

The new mill's lumber superintendent noted that work culture was a central issue in the planning of the new operation. The changes in the work environment and the role of employees required a new plant culture that would support and reinforce the new expectations. The new operation required different approaches to safety issues, product quality, communication exchange, and conflict resolution. In many cases, the changes would directly conflict old organizational norms and previously accepted values.

Employees would have to adopt a new frame of mind toward work and their role in the process. The lumber superintendent challenged the new crew to take an active role in supporting fellow workers and becoming involved in the plant's processes. Ultimately, management wanted to have a highly integrated/ strong work culture with organizational values aligned at all levels of the organization. Rather than allow the work group culture to develop without guidance, they chose to actively participate in its shaping. (Dickey, 1997)

Management emphasized four major goals that they perceived as necessary for success in the new mill. First, they needed to change the work group culture to align with the organizational needs. Second, they wanted to be the leader in safety in the industry. Third, they needed to capture a significant share of the Japanese export lumber market by producing and marketing a superior product. Finally, the new organization needed to build a reputation of total quality and continuous improvement with customers. (*CBX Tour Book*, 1995)

Human resource practices

To accomplish the desired goals, several human resource practices were implemented. A vision and a set of core values were developed. According to the vision statement, "Our vision is to be the model for the industry in providing quality lumber products that achieve 100% customer satisfaction, while providing quality employment opportunities and a competitive return to Weyerhaeuser Company." (p. 1) The vision statement listed nine core values: safety, respect, trust, teamwork/ cooperation, education/ development, communication, customer satisfaction, decision-making/ involvement, and

environmental stewardship. The lumber superintendent noted, "We shut the old plant down and opened a new mill with an all-new philosophy. We wrote a vision for this operation six months before it even began. We spent a week talking with everyone about what we needed to do differently before we opened the mill." (Dickey, 1997)

All hiring and selection processes were aligned with the desired values of the organization. During the startup of the mill, the management team had an opportunity to fill positions with people that fit the target work culture. Commenting on the start up of the mill, Dickey noted, "We weighted attitude very heavily when we hired. We wanted positive people who could support the whole and be team-oriented. Sure, they had to have the technical skills, but we also wanted people who we felt could grow." (*Preparing the Champion*, 1995, p. 19)

The hiring process adopted differed from the old mill. In the old mill people were hired with no basic skill testing and no employee involvement. Dickey pointed out, "When we hire a person, we have a rigid process. We have basic skills testing on reading ability/ comprehension, listening skills and very basic math. People who get through that go through structured interviews with staff, weighted with plenty of operating people." He further noted that, "The front-line employees select these people; they have to buy into the new employee." (*Preparing the Champion*, 1995, p. 19)

According to the CBX's hiring process, the Lumber Superintendent initiated the hiring process when new employees were required. Once applications were received; a candidate pool was selected. A pre-orientation was scheduled. New candidates in groups of fifteen to eighteen would receive a one-hour tour of the mill and a one-hour discussion of the CBX vision, its values, expectations, and management systems. At the

end of the pre-orientation, two exams were administered including an oral direction test and a reading comprehension test. Cutoff scores were established. Structured interviews were scheduled for those who passed the tests. Ten questions were asked by the Human Resource Representative and evaluated by a team of two supervisors and two crew members. The Lumber Superintendent would meet individually with each candidate as well. The selection team would recommend the top candidates. (*Hiring Process CBX*, 1997)

Once a new member was selected, the individual received extensive socialization into the culture. Before a new employee started work in the mill, he or she received a weeklong training in the basics of the business and its culture. Dickey described the process, "Once a person is hired, we spend a week with him or her in education. We teach them about everything from sales and marketing to technology to just setting expectations with them." (*Preparing the Champion*, 1995, p. 19) Before their first day on the shop floor, new employees were expected to know the goals and values of the organization.

After a week of training, new hires were introduced to the crew and assigned a mentor from the crew. The mentor would work with the new hire for three weeks and would be responsible for training and providing guidance. One supervisor discussing the mentor program recalled, "The mentor is basically the trainer. You know how it would be to go into a brand new facility. It's someone you get comfortable with." The supervisor further noted, "You have 150 people working here, and if you know someone right off hand you can relate. It's a lot easier than coming in here and not knowing a soul." New employees had a thirty-day trial period. The mentor was also responsible for

helping to evaluate the new hire. The Lumber Superintendent pointed out that not all-new hires were successful in their transition into the culture. He noted, "If someone doesn't work out, we have to terminate them. We do that jointly [company and union] too; the crews support that. It's a failure that does happen, but it has happened a couple of times; someone just couldn't be a member of the team." (*Preparing the Champion*, 1995, p. 20)

Communication was increased between the union, employees, and management. The mill's leadership and the union's representatives would meet monthly. During the meeting, operating statistics including profitability would be shared. This stood in contrast to the previous mill, where little information on the financial outlook was shared. Dickey (1997) noted that, "You can't ask people to do things they don't understand. They can't respond to things they have no communication about. So we communicate thoroughly."

This same information was then shared with the crews through daily crew meetings. Meetings were intended to provide management a channel for sharing key information and provide the crew an opportunity to provide feedback. A supervisor who had worked at both mills noted, "In the old mill we didn't have any avenues for sharing information other than one-on-one. We didn't have any crew meetings; safety meetings weren't mandatory, and some people came and some didn't. But there was no uniform manner in which to keep people informed." These meetings generally lasted only 5 to 10 minutes but they did communicate a strong message from the point of view of the supervisors. In an interview, one of the supervisors said that the meetings signified the organization's willingness to take downtime to talk with crews. It sent the message that

production was not everything. An employee discussing communication noted, "Here [CBX] everyone has an opportunity to hear in the meetings instead of information being passed down and misleading as it reaches the bottom."

In addition, once a year the plant would shutdown for two to three days to conduct education sessions. This had never been done in the old mill. These sessions provided another avenue to communicate financial information and education material to the crew. The sessions focused on financial information, but there were other types of educational material as well. The sessions also provided an opportunity to reinforce the culture and review the target vision and values of the organization. (Dickey, 1997)

Unlike the old mill, the new mill gave employees line stop authority. *(CBX Tour Book*, 1995) To ensure quality, each employee had the right to stop the production line to solve a quality or safety issue. In the old mill, only a supervisor was allowed to stop production (Dickey, 1997)

To promote safety, employee participation programs were implemented. A central safety committee was formed with representatives from the staff and from the workers on each shift. The committee was responsible for making recommendations on all aspects of safety in the mill. Sam Dickey noted, "...the crew used to say safety is management's responsibility. Now, with our various safety committees, I've got 59 leaders...in the crew." (*Preparing the Champion*, 1995, p. 21) In addition to the safety teams, each shift would now begin with several minutes of exercising. The stretching was intended to help workers be alert and reduce the risk of accidents. (*Two Sawmills*, 1991)

Finally, CBX negotiated a merit advancement system in contrast to the traditional seniority based process. Under the old mill's labor agreement, and that of most other unionized mills, management did not have this right. As the lumber superintendent noted, "We've got people here doing the same task at different rates of pay. That flies in the face of tradition." (Dickey, 1997) According to the Working Agreement, the mill's job classification system was grouped into two skill groups: manufacturing and maintenance. The manufacturing classification included nine and maintenance included six skill levels. To advance within a skill group, an employee had to achieve technical proficiency in a designated set of skills and receive a passing score on an annual team effectiveness evaluation. The evaluation was conducted for each employee with their supervisor and included a review of communication skills, technical expertise, and teamwork. *(Working Agreement*, 1992)

CBX employees could increase their pay rate through two processes. First, they could receive a merit raise within their job classification if they met the two requirements stated above. The company made the determination of which crewmembers would receive a merit raise but the union and crews could provide input. Second, employees could advance by filling vacant skill positions. According to the Working Agreement, "When an opening arises in a primary skill (job position), the opportunity will be posted on all bulletin boards. The primary skill will be described in terms of technical and experience requirements as well as desired qualifications." *(Working Agreement*, 1992, p. 8) The labor contract continues, "Team members who express interest in the primary skill opening will be evaluated. A successful candidate will be chosen and an announcement will be made. In this selection process, proper value will be placed on the

experience a person has on this primary skill on the opposite shift." *(Working Agreement*, 1992, p. 8) The contract further offered this example, "...if a day shift Barker skill opening occurs, the competent team member on second shift whose primary skill is Barker operator would be a likely first choice if he or she were interested." *(Working Agreement*, 1992, p. 8) In addition to technical proficiency and the team effectiveness evaluation, an interview was conducted for each open position. A team of management and crewmembers conducted the interview. The scores of the interview process were included in the decision process to fill open positions. (*Working Agreement*, 1992)

To meet the quality control demands of the new target market segment, the management team perceived that they needed employee involvement and participation. The merit raise process was perceived by management to provide an incentive for employees to get involved in mill processes and develop job skills. According to one supervisor, "Our merit system has provided the crew with a lot of job opportunities that you wouldn't find in a traditional environment. At the mill, the best performer is rewarded and will advance. You can't stand on the sideline and not participant and expect to advance."

The mill's leadership credited these practices as key factors in developing their work culture. In Smyth's (2000) review of the history of CBX, he commented that the mill was considered highly productive in its life. He also pointed out that many people claimed that the mill's success was directly tied to its unique work culture that promoted better union relations, safety, and quality.

Chapter 3--Method

Overview

Chapter Three describes the research methodology used in this study. The chapter provides an overview of the study population and includes a justification for stratifying the population. The instrumentation, data collection process, and data analysis procedures are described in this chapter. This chapter provides a discussion of both study reliability and validity. The final section of the chapter provides the results of intercoder reliability

Population

Population description

The population for this study was defined as full-time manufacturing employees, supervisors, and management personnel at CBX. Company executives and office personnel above the plant level were not included in the population. Employees with less than one month of plant service and summer college student help were excluded from the population on the grounds that they had not completed all of the organization's training programs and would likely not be familiar with the plant's target work culture. The remaining population totaled one hundred and forty-seven employees working in production, maintenance, and management positions.

Stratification by subculture groups

This study assesses shared agreement of culture variables among organizational members. Determining the extent culture variables are shared throughout the operation requires the identification of potential subgroups in the plant. According to Harrison Trice and Janice Beyer (1993), most organizations have subcultures. Subcultures consist of values, norms, cultural practices, and culture elements that are distinctive from the larger overall culture. Trice and Beyer suggest that subcultures can form around shared tasks and a shared workplace with stable membership. These characteristics provide a basis for determining potential sub-groupings that might exist in the organization studied.

Four sampling elements were identified as defining possible subcultures in the mill. These subgroups had the potential to develop subcultures in contrast to the target work culture. These elements consisted of work shift, department, job classification, and years of mill service. The work shift provided a stable work group in which a possible subculture could develop. The organization under study operated on a weekly three-shift work schedule. Work shifts were stratified into three groups representing the shift configurations present at the plant: Day, Swing, and Weekend shifts.

Mill departments provide a common set of tasks and functions in which a subculture could develop. At this organization departments were already formalized as part of the operation's structure. For this analysis, departments were classified as Sawmill, Finishing, Maintenance/ Support, and Shipping.

Mill job classifications provide a common occupational experience that can include similar education/ training, job tasks, and functions. Job classifications were placed into the seven general job descriptions: Manufacturing One, Manufacturing Two,

Manufacturing Three, Support One, Support Two, Support Three, and Management. Each classification represented a range of positions that had common job descriptions. Manufacturing One jobs represented entry-level production and cleanup positions. Manufacturing Two jobs represented machine center and heavy equipment operators who required some technical training. Manufacturing Three jobs represented highly skilled positions requiring specialized knowledge. Saw filers were classified as Support One, millwrights as Support Two, and electricians as Support Three. The Management classification included all supervisors.

Years of mill service provided another possible subculture in the organization. Years of plant service were divided into three strata representing a Senior, Junior, and Newcomer classification. This determination was based on the bi-modal distribution of service years in the plant's population. Based on hiring and growth patterns, the plant's population tends to have been hired during two distinct phases: the initial startup and then with the addition of a second and weekend shifts. Based on that information, Senior employees were classified as working more than four years at the plant. Junior personnel had worked at CBX from more than one year and not more than four years and newcomers were classified as working up to one year at the mill.

Literature to support stratification

Each subgroup in this study could have developed as a subculture in the organization and thus have its own interpretation of the values of the organization. The organizational culture literature provides support for the subgroups used in this study. First, there is literature support for subculture development along shift configuration.

Work shifts provide a relatively stable structure allowing organizational members to develop shared experiences. Group evaluations, rewards, and potential anxieties associated with work allow work groups like shifts to develop subcultures. Communication interlinkages are also indicators for group identification. Members of a particular work shift have an opportunity to develop communication interaction and weak tie affiliations that are unique to that work shift. (Trice & Beyer, 1993)

In addition, workers on each shift are dependent on each other for completion of work tasks. The workflow of this sawmill is characterized by sequential task interdependence. Sequential task interdependence requires one task to be completed before another may be started. A production assembly line shares this characteristic. This relationship also exists in the maintenance role in that a machine must first be repaired before it can be used again. Trice and Beyer (1993) note that increased task interdependence allows for the growth of subcultures. The development of a subculture unique to a work shift may be generated by the interdependence of each member on the shift to finish the required tasks and the increased communication interaction opportunities associated with high task interdependence. (Trice & Beyer, 1993)

Second, departments and job classifications have been linked to the development of distinct subcultures. Trice and Beyer (1993) argue that departments and shared job classifications are likely to develop distinct cultures in contrast to the larger organizational culture. A subculture develops because its organizational members share similar experiences, occupational goals, and educational backgrounds. Several studies have found that distinct subcultures have developed along department lines and developed different shared understandings about what is important for their group. For example, Geert

Hofstede (1998), studying a large insurance company, found three distinct work cultures: production, bureaucratic, and professional. These work cultures developed along department lines which were distinguished by the nature of the work task. The production culture was found in the administrative departments that processed paperwork for insurance claims. The work was characterized as routine and process orientated. The bureaucratic culture represented the sales and claims handlers. Their work was non-routine, much less process orientated and specialized. The professional culture represented the managers of the organization. Their work was very non-routine and focused on decision-making. Hofstede's study suggested that subcultures do develop along department lines based on the nature of the task required to complete the work.

Subcultures may also develop along demographic groupings such as years of service. Trice and Beyer (1993) refer to the terms old-timer and newcomer as examples of subcultures based around seniority. Kenneth Perkins (1983) points out that seniority-based subcultures may have different values, goals, and expectations for work. Studying a fire department, Perkins (1987) found that years of service were related to different perceptions about the organization's goals and values. New members in the fire department valued increased education and training. The newer members wanted the department to fulfill a larger role in the community by becoming a county fire department. In contrast the older members, including the founders of the department, desired a local community focus and emphasized the traditional fire-fighting role. In addition, Perkins found that the older members were more concerned with loyalty and commitment, in contrast to the new membership that was more concerned with the quality of work and

interpersonal relationships. These groups represented two distinct subcultures that formed around seniority in that organization.

A plant crew list was obtained from the operation's administrative office. The list contained the department, job classification, years of service, and work shift of all employees at the plant. After the names of summer help and employees with less than one month of service were removed, there were one hundred and forty seven names on the list (six women and one hundred and forty-one men). The average age of the population was forty-two, with an average of eleven years of company service. Thirty-five employees (twenty-four percent of the population) had worked in the original mill. One hundred and twelve employees (representing seventy-six percent of the population) had not worked in the original mill. All of the subjects were sorted into discrete groups based on the strata of work shift, department, job classification, and years of service. Each list was composed of all subjects who shared a particular stratified characteristic.

Every member of the defined population received a letter asking for his or her participation in the study. The letter included a brief description of the research, an explanation of the procedures, and the expected duration of the subject's participation. Each letter asked subjects to check a box designating whether they wished to participate. The letter asked subjects to return the checked response to the plant office or to their supervisor. (A copy of the participant response letter is in Appendix C.) The letter was delivered to each subject during working hours by the shift supervisor. The letter did not serve as an informed consent.

Of the population of 147 members, 104 were interviewed representing 71% of the total population. The 45 members that were not interviewed fell into one of two

categories: 1) denied request for an interview or 2) did not return the participation request form. No follow-up process was used for participant request forms that were not returned. Table 3.1 describes the responses of subjects to participation in this study. Tables 3.2-3.5 describe the stratification of the study's participants.

Table 3.1
Description of response to a request to interview

Response	Number of Occurrences	Percent Population
Agreed to participate in the study	104	71%
Declined to participate in the study	6	4%
No response	37	25%
Total number of potential interviews	147	100%

Table 3.2
Work shift population stratification

Classification	Population	Percent (%)	Respondents	Percent Pop. (%)
Day Shift	69	47%	47	68%
Swing Shift	48	33%	38	79%
Weekend Shift	30	20%	19	63%
Total	**147**	**100%**	**104**	**71%**

Table 3.3
Department population stratification

Classification	Population	Percent (%)	Respondents	Percent (%)
Sawmill	97	63%	65	67%
Finishing	12	74%	12	100%
Maintenance	31	21%	22	71%
Shipping	7	5%	5	71%
Total	**147**	**100%**	**104**	**71%**

Table 3.4
Job classification population stratification

Classification	Population	Percent (%)	Respondents	Percent (%)
Manufacture I	45	31%	28	62%
Manufacture II	51	35%	42	82%
Manufacture III	16	11%	8	50%
Support I	10	5%	9	88%
Support II	16	11%	10	63%
Support III	4	4%	2	50%
Supervision	5	3%	5	100%
Total	**147**	**100%**	**104**	**71%**

Table 3.5
Years of service population stratification

Classification	Population	Percent (%)	Respondents	Percent (%)
Newcomers	3	2%	2	67%
Junior Employees	36	25%	26	72%
Senior Employees	108	73%	76	70%
Total	**147**	**100%**	**104**	**71%**

Instrumentation

Interviews

The instrumentation for this study was a face-to-face interview. The interview was structured using a specific list of questions to gather responses relevant to the research questions. The same questions were used in all of the interviews without variation from the interview script. The interview strategy employed open-ended and non-scripted follow-up questions. Follow-up questions allowed participants an

opportunity to elaborate and explain their responses. Open-ended interview questions were ideal to gather data in this situation because possible answers to culture elements under study could be diverse and unanticipated. Open-ended questions gather systematic information by allowing participants to explain their reasoning behind a conclusion, preference, or behavior. (Reinard, 1994) In this way, open-ended questions increase the possibility of capturing an accurate reflection of participants' responses.

Interviews versus questionnaires

For this study, interview instrumentation provided several advantages over a questionnaire. First, a high response rate was required to generate a significant sample to assess different possible subcultures. John Reinard (1994) points out that it is often easy for people to ignore a questionnaire but it is more difficult to say no to an interview. Interviews typically have higher response rates in comparison to questionnaires. (Babbie, 1992) Second, it would have been difficult to anticipate the possible responses that could have been given to describe the work culture. The interview method allowed the researcher to ask follow-up questions to help ensure that the respondent understood the question. The follow-up questions allowed for clarification and additional data gathering that increased the accuracy of the response. This would not have been possible with a questionnaire.

Data Collection

Interview procedure

Interviews were scheduled by shift and were conducted from June of 1997 to September of 1997 to accommodate the needs of the organization. The Employee interviews were conducted in the lunchroom during working hours. Interviews were also conducted in enclosed operator cabs in cases where they were available. Supervisor and management interviews were conducted in personal offices or the lunchroom. Only the participants and the interviewer were present during the interview. The interviewer used a scripted greeting for all interviews without variation. (A copy of the greeting script is available in Appendix D.)

Informed consent

The interview began with the researcher greeting the subject. The researcher instructed the interviewee to read and understand the informed consent form. The informed consent provided a description of the research, an explanation of the procedures used, the duration of the subjects' participation, anonymity, and any foreseeable risks associated with the study. (For a copy of the informed consent form see Appendix E.) After reading the consent form, subjects were asked if they were willing to participate. No subjects refused to sign the consent form. The researcher asked subjects for permission to audiotape the interview. No subjects refused to be audiotaped.

The interviewee was informed that a series of questions would be asked about the work culture at his or her plant. Questions were asked in chronological order from the

interview guide using an inverted questioning strategy. Inverted questioning uses a pattern of specific questions and expands into more general open-ended questions. A probing questioning strategy was used for follow-up questions. Probing questions ask respondents to elaborate on their responses and provide explanation. (Reinard, 1994) If an interviewee thoroughly answered a later question in a previous response, the question was omitted. Interviews ranged from 5 to 50 minutes in length. At the end of each interview, the researcher thanked the interviewee for his or her participation.

Dual documentation was used during the interview process. In addition to the audiotaped interview, the researcher gathered notes from participant responses. The interview audiotape recordings were transcribed verbatim. Participant names were removed from each transcript but demographic information was included for data analysis. To increase reliability, audiotape transcripts and researcher field notes were compared for similarities.

Data Analysis

Interview questions

To determine the target work culture of the organization, culture-communicating documents were gathered. Plant documents describing the target culture of the operation were collected after two informal meetings with the plant manager. The documents included a range of material from mission statements to training manuals. Organizational documents were limited to materials that were shared with employees and used to communicate components of the culture. Included in the material were all vision, value,

and goal statements used for training and reinforcing the culture. (A list of the documents reviewed is available in Appendix F.) These documents were reviewed for culture themes. From these documents, a set of interview questions was developed for an interview with the plant manager. (A copy of the interview guide is in Appendix H.)

The interview with the plant manager provided a baseline for the expectations of the target culture. From the interview and the review of the plant's guiding documents, a list of interview questions was prepared for plant employees. (A copy of the interview guide is in Appendix G.)

Each interview question was connected to a particular research question. The First Research Question focused on the extent that members shared agreement on the stated core values of the organization. Interview questions two, three, and five were used to assess value frequency. The focus of these questions was to elicit the participants' perceptions of the expectations and values of the organization. Interview questions four, six, nine, ten, and thirteen were used to assess value favorability. The focus of these questions was to elicit the participants' agreement or disagreement with the values described in the interview. Research Question Two was concerned with the identification of any contrary or conflicting values with the espoused target culture. All of the interview questions were used to assess this research question. Research Question Three focused on the organization's perception of its mill culture. Interview questions eleven and twelve were used to assess this research question.

The purpose of the study was to assess the extent that a target work culture was shared across this manufacturing operation. To address this purpose, only aspects of the culture that were targeted were of interest to the researcher. To ensure an accurate

understanding of the target work culture and to provide relevance to the organization studied, the research questions and proposed interview guide was shared with the mill manager and human resource manager for input. No changes were made to the research questions or the interview guide.

To ensure that the interview questions were understandable and relevant to the mill population a pilot study was conducted. Fifteen employees were randomly selected from the organization's crew list. Subjects received the same letter asking for their participation and the same interview script and process was used for the pilot study. Based on the feedback from the pilot study, no changes were made to the interview questions.

Content analysis

According to Lynda Kaid and Anne Wadsworth (1989), content analysis is a research technique that codes data into classification units and reduces it to manageable elements to make inferences about communication messages. This research method may be used to make inferences about the message sender, message receiver, or the intended audience. Content analysis procedures use a systemic and objective method to produce quantitative descriptions of the content and use of communication. (Weber, 1990) Content analysis is a multi-step process that requires developing categories for coding thematic content, training coders, coding the material of interests, and assessing the results from the data. Content analysis may be used in a variety of ways including assessing open-ended interview questions in organizations. (Reinard, 1994)

Content analysis is an ideal technique for assessing organizational culture because it assesses information that is contained in written and oral communication. George Barnett (1988) notes that organizational culture elements are embedded in communication. Specifically, culture elements are transmitted in messages. People communicate culture through the way they talk about their work. Content analysis provides a method for quantitatively assessing this language.

There are some limitations to content analysis. Although content analysis can describe, it does not support cause and effect conclusions. Content analysis may point to a trend or help explain a concept but it can not reveal the actual impact of the variable. In addition, content analysis can not be generally applied to other studies that use different categories. Often content categories are specific to only one content analysis making comparisons difficult. (Reinard, 1994)

Coding units and classification system

A coding scheme was developed for Research Question One and Three. For Research Question One, the organization's core value statement was used as the coding taxonomy. The coding classifications were *safety*, *respect*, *trust*, *teamwork/ cooperation*, *education/ development*, *communication*, *customer satisfaction*, *decision-making/ involvement*, and *environmental stewardship*. (Appendix I includes a definition of each organizational value.) To assess Research Question Three, possible reasons for how the culture helped or hurt the mill were identified from reviewing the answers from the interview text. The responses were clustered into categories that included *communication activities*, *employee selection*, *education opportunities*, *operational processes*,

participation, *teamwork*, and *leadership*. These classifications were used as the coding taxonomy to address Research Question Three.

The units of analysis for the content analysis were thematic units that included words and phrases. The coding scheme included substance (what is said) and directionality (pro or con) categories. The unit of enumeration is the way in which quantification is accomplished for each category. The unit of enumeration may be frequency counts or a recording of the presence or absence of a classification. (Kaid & Wadsworth, 1989) For this study, the unit of enumeration was a coding scale. Coders were asked to scale the extent that value classifications were present in the interview and whether they were viewed as positive or negative.

Two rating scales were developed for coding the values found in the interviews. The frequency scale measured the extent that a value theme was reflected in the interview. The scale ranged from 1 to 5. *One* indicated the value theme was not present in the interview. A *two* indicated that the theme was discussed but none of the examples for the theme were mentioned. For example, a participant might have noted that the value of safety was important at CBX but did not provide any of the definitions for the value. A *three* indicated that one of the examples was given. For example, a participant might have said that safety was more important than production, which was one of the key examples for the safety value theme. A *four* represented that most of the themes were implied or discussed. For the value of safety, a *four* response would have discussed safety as the number one priority at CBX, safety before production, safety as an individual responsibility, and that CBX employees care about and watch out for each other. The definitions for each organizational value ranged from three to six examples.

Because the definitions were not even, a *four* score always identified all but one of the examples in the interview. A *five* indicated that the theme's examples were all implied or discussed. For the value of safety, housekeeping as well as the above examples would have been discussed in the interview.

The favorability scale measured the extent that a theme was viewed as positive or negative in the interview. The scale ranged from 1 to 5, with a *one* representing that the theme was viewed as strongly negative. For example, a participant might have stated that the mill's management could never be trusted to tell the truth about the plant's financial outlook. A *two* represented that a value theme was viewed as negative. For example, a participant might have said that there is not a lot of trust in the mill between management and employees. Some people do not think that all of the information about the market is being shared. A *three* score represented that the interview response to a value was predominantly neutral. A *three* response either did not provide a position on whether a certain value was positively or negatively supported in the mill, or a participant provided both a positive and a negative statement. A *four* represented a value theme that was viewed as positive and a *five* represented a value that was viewed as strongly positive. In cases where the frequency scale was *one* for an interview, the favorability scale was classified as no information available.

For Research Question Three, a frequency count was conducted to determine how many employees believed that the culture was related to the performance of the mill. In follow-up questions, the respondents were asked why they perceived that the culture supported or did not support the mill's performance outcomes. Those responses were grouped into themes and subjected to a frequency count.

To enhance reliability and to ensure that coders understood the classification system, training was conducted. Two coders were used. The researcher was one of the coders. Each coder used a codebook. The book contained explanations of the coding instruments, each category, and how it should be marked. To help in the classification process, the value taxonomies contained cues and exemplars to help coders determine classification. For Research Questions One, the coders used the value taxonomy and its exemplars to assign a frequency and favorability rating for each interview. In assigning the rating, coders also considered their global impression of the interview responses. For Research Question Three, coders tallied the answer to the closed question about the performance-culture relationship and then classified the follow-up responses using the taxonomy of categories developed from the interviews.

Coders worked individually and used the codebook strictly, adhering to its definitions, not their own definitions of the categories. There were no time limits. (A copy of the value coding taxonomy is available in Appendix I.)

Validity and intercoder reliability

According to Reinard (1994), "Validity is the degree to which a measure actually measures what is claimed." (p. 177) Three methods were employed to ensure validity in this study. First, the construct under study was the elements of the work culture that were managed by the organization. To ensure that the actual components of the target culture were studied, a pilot study was used to provide feedback on the interview process and ensure that participants understood the questions. In addition, the interview questions

were shared with the plant's leadership for feedback. This provided an additional check to ensure that the questions actually asked about the perceptions of the target culture.

Second, the coding scheme was developed from the organization's stated vision and values statement that served as the written resource document for the culture. Through the selection and training process, employees were expected to have knowledge of the concept of culture and specifically the elements of culture that were outlined in their vision and values statement. The coding scheme was also reviewed with management to ensure that it reflected the actual components of culture that were considered important. Third, the interview strategy used follow-up questions that allowed the researcher to ask for clarification from participants. As Reinard (1994) notes, interviews often have a strong claim to validity because the researcher can ask questions to ensure that the respondent understands the questions as the researcher intended. In this case, the researcher was able to observe whether respondents understood the questions and he was able to ask follow-up questions to clarify answers. By combining these three methods this study has a strong claim to validity.

Reinard (1994) defines reliability as the internal consistency of a measure. A measure with high reliability will produce the same measurements over time. By using two coders to assess the data, the question of whether these coders assessed the data the same must be addressed. To ensure reliability, a statistical method for testing the extent that coding categories are used consistently between coders is required. (Weber, 1990) For this study both scaling and frequency counts were employed to classify the data. To assess intercoder reliability, both coders rated twenty interviews. Intercoder reliability was assessed for value frequency and favorability rating, as well as the coding of the

human resource practices. This analysis provided an estimate of how well the ratings of two different coders agreed when they were coding the same interviews.

To assess the frequency and favorability ratings, a conventional Pearson product-moment correlation was used. A correlation is a measure of association. A correlation shows the degree to which variables coincide with each other. (Reinard, 1994) The Pearson product-moment correlation was suitable in this case because all of the value themes had a frequency rating from 1 to 5 and a favorability rating from 1 to 5. A no score indicated that the frequency rating was a one and the value did not appear in the interview. This correlation works when interval level measures are employed such as these scales.

Scott's pi was used to assess the intercoder reliability for the frequency count of responses to Research Question Three. Scott's pi compensates for the rate of agreement on a category that would be expected by chance alone. (Reinard, 1994) Both the Pearson product moment correlation and Scott's pi compute a reliability coefficient. The reliability coefficient measures the amount of association or coincidence of the coding. According to Reinard (1994) a reliability coefficient can range from 0, or no reliability to 1 or perfect reliability. A measure of .90 or higher is considered high reliability. A good measure will have at least .80. (Reinard, 1994)

Analysis of research questions

The First Research Question asked to what extent were the core organizational values shared across the organization. To assess this question a one-way analysis of variance was conducted for frequency and favorability for each organizational value in

each stratified group. After tallying the frequency and favorability scales for each stratified group, a mean was calculated for each distribution. The analysis of variance was used to compare means across each grouping. According to Reinard (1994), an analysis of variance is a, "...test of statistical significance that compares the means of two or more groupings." (p. 326) The analysis of variance is formulated by calculating a variance using the means of a data set. Then the variance is compared to the variation that is within each group. If there were few differences among the stratified groups on a value, then the variance would be small. If there were differences among means, then the variance computed would be larger. (See Appendix J for the calculation.) Martin's (1992) three perspectives on culture were employed to assess this question and provide an additional analysis of Research Question One. Each value was assessed and classified as either integrated, differentiated, or fragmented

Research Question Two asked if there were any inconsistent values that were in conflict with the target culture. Emerging themes from the interviews were assessed and participant excerpts were included as evidence.

The Third Research Question asked if employees perceived their work culture to be related to the plant's performance outcomes. To assess this question a frequency count was employed to count the percent agreement versus disagreement. A follow-up assessment asked the participants how they thought the culture helped or hurt the plant's performance. The results of the interview responses were content analyzed and assessed through a frequency count of each category. Additional qualitative analysis was conducted by analyzing individual responses.

Results of Intercoder Reliability for Value Scales

Intercoder reliability was calculated for 20 interviews. Two coders were used to assess the interviews. The researcher was one of the coders. Each interview was first coded independently. For each organizational value, a correlation coefficient was calculated for both frequency and favorability scales. The correlation coefficient provided a measure of association between the two coders. The coefficient measured the direct relationship between the two coders and the coding of each value. Coders then discussed each value category and gave reasons for any differences in interpretation. Discussion focused on why certain classification decisions should be made and which code should be assigned for the two scales. The interviews were coded a second time to improve reliability.

For the frequency scale, ratings were assigned from 1 to 5 for all interviews. For the favorability scale, organizational values were coded from 1 to 5 for all interviews. If an interview had a frequency rating of one, or in other words, did not discuss the value, it was assigned a rating of no information. Because a frequency rating of one influenced the rating in the favorability scale, all interviews in the sample with a frequency of one were removed from the favorability scale.

Table 3.6 shows the results for each organizational value theme. The corelations were calculated separately for each organizational value. The coefficients ranged from .079 to 0.98 for frequency and from 0.78 to 0.96 for favorability. A total coefficient of 0.94 was achieved for the frequency scale and a total coefficient of 0.86 was achieved for the favorability scale. These values are high and indicate that the coding was markedly too highly dependable.

Table 3.6
Pearson product moment correlation for value frequency and favorability

	Frequency		Favorability	
Organizational Value Theme	Coefficient	n	Coefficient	n
Safety	.79	20	.81	20
Respect	.88	20	.79	15
Trust	.85	20	.81	19
Teamwork/ Cooperation	.84	20	.88	20
Education/ Development	.95	20	.96	10
Communication	.85	20	.82	20
Customer Satisfaction	.92	20	.78	17
Decision-Making/ Involvement	.90	20	.84	18
Environmental Stewardship	.98	20	.80	5

Results of Intercoder Reliability for Frequency Count

Intercoder reliability was calculated using Scott's pi. Twenty interviews were used to calculate intercoder reliability. A rate of 88% of agreement was achieved between the two coders. A good percentage of agreement for intercoder reliability is at .80 or above. (See Appendix J for the calculation for Scott's pi.)

Chapter 4--Results

Overview

Chapter Four provides the descriptive statistics from the frequency and favorability scales and the results of the analysis of variance. In addition, the results of the frequency count and content analysis for Research Question Three are included.

Table 4.1 presents the results of the mill total frequency scale. The mill total frequency scale indicated a high mention of organizational values among the participants. The values of safety, teamwork, communication, and customer satisfaction had eighty percent or more of the respondents identifying all or at least the majority of each value's examples. Often the participants provided specific statements that matched the mill's value definitions precisely. These statements indicated that many of the participants not only knew the value theme but also had a strong understanding of its definition and application at CBX. The value of environmental stewardship had a low frequency of mention in the interviews. Eighty-seven percent of the respondents did not mention the theme.

Table 4.2 presents the results of the mill total favorability scale. Both safety and customer satisfaction had over ninety percent of the respondents report that the values were functioning positively at CBX. Eighty-six percent of the respondents rated teamwork as positive at the mill. Over seventy percent of the respondents rated decision-making and communication as positive at CBX. The values of trust and respect had the lowest level of agreement with less than sixty-five percent of the respondents describing the values as positively functioning in the mill.

Results of Analysis of Variance

Analysis of variance was employed in this study to test whether observed differences in stratified groups mean value frequency and favorability was statistically significant. Analysis of variance assesses whether several populations have the same mean by comparing the variation among the means of several groups with the variation within each group. If there are few differences among group means, the variance calculated from them will be small. If there are differences among means, the variance will increase as differences increase. If the differences between means are beyond chance, then the variance of means will be greater than the average variance for each group.

For this study, a one-way analysis of variance was used to assess each stratified group's frequency and favorability mean. The null hypothesis is that the population means of each stratified comparison are equal. In this way, analysis of variance can describe possible groups within the organization that may hold different culture knowledge and agreement for an organizational value.

The comparisons in this study have unequal sample sizes. To calculate an analysis variance requires that the total between group variance be weighted by the different sample sizes. A grand mean of all the group means also must be calculated rather than a simple average of group means. (See Appendix J for the calculation.)

There were two modifications to the research study. First, no analysis of variance was calculated for the favorability rating for the value of environmental stewardship. The value only appeared in thirteen percent of the total population. In many subgroups there were no favorability ratings or only one rating with a variance of zero. Second, both the

job classification of Support Three and the years of service classification of Newcomer contained only two participants. Because the population groups were so small, they were removed from the analysis of variance. The results of the analysis of variance are presented from tables 4.8 to 4.15.

The null hypothesis that the populations for each value frequency and favorability means are equal was rejected five times at an alpha risk of .05. The null hypothesis was rejected one time at an alpha risk of .10. For each case, the variation between group means was large enough that it could not be explained by chance alone. This provides evidence in these cases that there are statistically significant differences among certain value means, which could be the basis of a subculture for the particular organizational value. In the following review, each case is briefly described.

For the populations of work shift, the results of the analysis of variance find the variance between frequency means for trust to be statistically significant at an alpha risk of .05. The analysis of variance indicates that there was significant variance between the means of the three groups. The statistics indicate that the weekend shift as a group, knew more of the target culture examples than the other shifts. Eighty-nine percent of the weekend shift participants scored a four or five on the scale. Eleven percent scored a three. There were no one or two scores. In contrast, nineteen percent of the day shift had a score of one or two while six percent of the swing shift had a score of one or two. In conclusion, the weekend shift crews exhibited more culture knowledge of the value of trust than their counterparts. Although the trust frequency scale was significant, the favorability scale did not show statistical significance.

For the populations of work department, the results of the analysis found the variance between frequency means for teamwork and communication to be statistically significant at an alpha risk of .05. For the value of teamwork, the sawmill had the highest mean at 4.49 with a standard deviation of .77. The maintenance department had the lowest frequency mean with a rating of 3.50 and a standard deviation of 1.47. Fifty-nine percent of the maintenance crew scored a four or five. Eighteen percent of the maintenance population received a 3 and twenty-three percent of the population didn't discuss teamwork or only mentioned the value for a one or two rating. The finishing mean was 4.25 with a standard deviation of 1.22.

For the value of communication, the shipping department had the highest mean at 5.0. All five members of the department included all of the culture examples for communication in their interviews. The maintenance department had the lowest frequency mean with 3.95 and a standard deviation of .84. The sawmill had an average rating of 4.38 and the finishing department had an average of 4.25.

For the value of communication, the frequency scale shows a statistically significant test statistic at alpha risk .05. For the value of communication, the Manufacturing Three classification has the highest mean on the frequency scale with a 4.75 and standard deviation of .46. The Support Two population has the lowest mean with 3.70 and a standard deviation of .67. All of the strata groups have relatively close distributions. The Support One classification has the largest standard deviation with .93.

The results for the samples of years of service showed the frequency mean for communication to be statistically significant at alpha risk of .05. The Senior population of the mill had the higher mean with 4.38 and a standard deviation of .73. Forty percent

of the Senior employee population scored a five on the communication frequency scale. Thirty-three percent of the Senior employee population received a four rating and fifteen percent received a rating of three. The Junior population had a mean of 4.04 and a standard deviation of .72. The classification had twenty-seven percent of the population with a score of five. Fifty percent of the Junior population received a four and twenty-three percent received a rating of three. The results indicate that Senior employees had a greater percentage of five scores or complete knowledge of the culture examples in contrast to the Junior plant members.

The value of environmental stewardship was statistically significant at an alpha risk of .10. For the Junior employee population only one participant discussed the value of environmental stewardship. Ninety-seven percent or twenty-five participants did not discuss the value. For the Senior employee population, thirteen employees discussed the value representing twelve percent of the Senior population.

For the years of service favorability scale, only the variance of the means for decision-making was statistically significant at an alpha risk of .10. The Senior population had a higher mean at 4.18 and a standard deviation of .95 than the Junior population. The Junior population mean was 3.80 with a standard deviation of 1.00.

Results of Data Collection

Table 4.1
Mill total frequency rating, mean, and standard deviation

	Frequency Rating							
Organizational Value Theme	5	4	3	2	1	Total	M	SD
Safety	50	38	14	2	0	104	4.31	.78
Respect	18	36	27	7	16	104	3.32	1.28
Trust	30	39	24	5	6	104	3.79	1.09
Teamwork/ Cooperation	55	30	11	2	6	104	4.24	1.07
Education/ Development	27	38	23	3	13	104	3.61	1.26
Communication	51	38	15	0	0	104	4.35	.72
Customer Satisfaction	52	31	16	2	3	104	4.22	.97
Decision-making/ involvement	37	34	24	4	5	104	3.90	1.08
Environmental Stewardship	7	2	4	1	90	104	1.41	1.12

Table 4.2
Mill total favorability rating, mean, and standard deviation

	Favorability Rating							
Organizational Value Theme	5	4	3	2	1	Total	M	SD
Safety	83	16	5	0	0	104	4.38	.67
Respect	22	34	23	7	2	88	3.76	.99
Trust	34	28	17	14	5	98	3.73	1.22
Teamwork/ Cooperation	46	38	13	1	0	98	4.32	.74
Education/ Development	32	35	19	5	0	91	4.03	.89
Communication	46	29	17	10	2	104	4.03	1.08
Customer Satisfaction	51	40	10	0	0	101	4.42	.66
Decision-making/ involvement	42	31	21	3	2	99	4.09	.97
Environmental Stewardship	10	2	2	0	0	14	4.57	.76

Table 4.3
Shift mean and standard deviation for value frequency and favorability

	Day Shift		Swing Shift		Weekend Shift	
Organizational Value Theme	Freq.	Fav.	Freq.	Fav.	Freq.	Fav.
Safety						
M	4.28	4.38	4.29	4.32	4.37	4.53
SD	.74	.61	.87	.77	.68	.61
Respect						
M	3.28	4.00	3.50	3.49	3.05	3.80
SD	1.36	.99	1.08	1.01	1.43	.86
Trust						
M	3.45	3.86	3.95	3.59	4.32	3.74
SD	1.23	1.20	.96	1.28	.67	1.19
Teamwork/ Cooperation						
M	4.09	4.37	4.42	4.26	4.21	4.29
SD	1.23	.76	.68	.72	1.32	.77
Education/ Development						
M	3.60	4.20	3.50	3.90	3.84	3.89
SD	1.28	.81	1.37	.87	.96	1.05
Communication						
M	4.38	4.17	4.13	3.84	4.47	4.05
SD	.74	1.03	.78	1.15	.61	1.08
Customer Satisfaction						
M	4.19	4.41	4.03	4.33	4.53	4.63
SD	1.14	.62	1.10	.68	.70	.68
Decision-making/ Involvement						
M	3.81	4.16	3.97	3.97	4.00	4.17
SD	1.24	.90	.85	1.10	1.11	.86
Environmental Stewardship						
M	1.51	4.63	1.26	4.33	1.47	4.67
SD	1.23	.74	.95	1.15	1.17	.58

Table 4.4
Department mean and standard deviation for value frequency and favorability

	Sawmill		Finishing		Maintenance		Shipping	
Organizational Value Theme	Freq.	Fav.	Freq.	Fav.	Freq.	Fav.	Freq.	Fav.
Safety								
M	4.31	4.46	4.42	4.25	4.09	4.18	4.32	4.80
SD	.79	.64	.67	.75	.81	.73	.86	.45
Respect								
M	3.37	3.77	2.92	3.89	3.32	3.67	3.60	3.80
SD	1.27	1.01	1.38	1.05	1.32	1.03	1.14	.84
Trust								
M	3.89	3.64	3.25	3.64	3.64	4.05	4.40	3.80
SD	1.08	1.24	1.06	1.50	1.18	1.02	.55	1.30
Teamwork/ Cooperation								
M	4.49	4.33	4.25	4.18	3.50	4.11	4.20	4.60
SD	.77	.71	1.22	.75	1.47	.90	.84	.55
Education/ Development								
M	3.74	3.98	3.67	4.44	3.14	3.94	3.80	4.20
SD	1.08	.91	1.72	.53	1.46	.97	1.10	.84
Communication								
M	4.38	4.09	4.25	4.00	3.95	3.86	5.00	4.00
SD	.68	1.13	.75	1.13	.84	.94	0.00	1.22
Customer Satisfaction								
M	4.38	4.43	3.33	1.22	3.91	4.45	4.60	4.60
SD	.78	.66	1.56	.67	1.27	.69	.89	.55
Decision-making/ Involvement								
M	3.88	4.05	3.83	4.60	3.86	3.95	4.60	4.20
SD	1.02	.97	1.47	.70	1.13	1.07	.55	.84
Environmental Stewardship								
M	1.34	4.86	1.33	5.00	1.45	4.33	2.40	4.00
SD	1.02	.38	1.15	0.00	1.22	1.15	1.67	1.00

Table 4.5
Job classification mean and standard deviation for value frequency and favorability

	Management		Manufacture I		Manufacture II		Manufacture III	
Organizational Value Theme	Freq.	Fav.	Freq.	Fav.	Freq.	Fav.	Freq.	Fav.
Safety								
M	4.40	4.40	4.32	4.39	4.38	4.45	4.25	4.50
SD	.55	.55	.86	.79	.73	.59	.71	.53
Respect								
M	3.60	4.40	3.36	3.67	3.26	3.76	3.50	4.00
SD	1.14	.89	1.34	1.20	1.38	.85	.53	.93
Trust								
M	4.40	4.20	4.00	3.67	3.67	3.50	3.88	4.13
SD	.55	.84	1.02	1.47	1.20	1.18	.64	1.13
Teamwork/ Cooperation								
M	4.20	4.40	4.54	4.36	4.33	4.35	4.50	4.38
SD	1.10	.89	.64	.56	.98	.77	.93	.74
Education/ Development								
M	3.80	4.40	3.75	4.16	3.60	3.89	4.25	4.25
SD	.84	.89	1.21	1.03	1.25	.77	.71	.71
Communication								
M	5.00	4.80	4.29	4.21	4.36	3.93	4.75	4.00
SD	0	.45	.76	1.03	.66	1.22	.46	1.07
Customer Satisfaction								
M	3.80	4.00	4.43	4.59	4.12	4.35	4.75	4.38
SD	.84	.71	.79	.50	1.06	.70	.46	.74
Decision-making/ Involvement								
M	4.20	4.40	3.79	3.88	3.90	4.25	4.38	4.25
SD	.45	.55	1.13	1.14	1.10	.84	1.06	.89
Environmental Stewardship								
M	2.60	5.00	1.29	5.00	1.38	4.60	1.63	4.00
SD	2.19	0	.90	0	1.13	.89	1.19	0

Table 4.6
Job classification continued mean and standard deviation for value frequency and favorability

	Support I		Support II		Support III	
Organizational Value Theme	Freq.	Fav.	Freq.	Fav.	Freq.	Fav.
Safety						
M	4.22	4.11	4.10	4.30	3.50	4.00
SD	.67	.78	.99	.67	.71	1.41
Respect						
M	2.67	3.33	3.70	3.67	3.50	4.00
SD	1.32	.52	1.25	1.22	.71	1.41
Trust						
M	3.56	3.88	3.70	4.00	3.00	4.50
SD	1.42	1.13	.95	1.05	1.41	.71
Teamwork/ Cooperation						
M	3.56	3.86	3.70	4.63	2.50	3.00
SD	1.59	.90	1.57	.74	.71	0.00
Education/ Development						
M	2.67	4.00	3.40	3.88	4.00	4.00
SD	1.32	.89	1.65	1.13	1.41	1.41
Communication						
M	4.11	4.22	3.70	3.50	4.00	3.50
SD	.93	.83	.67	.97	1.41	.71
Customer Satisfaction						
M	4.22	4.50	4.30	4.40	2.00	4.00
SD	1.30	.76	.95	.70	1.41	0.00
Decision-making/ Involvement						
M	3.78	4.00	3.90	3.78	3.50	4.00
SD	1.09	.87	1.29	1.39	.71	0.00
Environmental Stewardship						
M	1.00	0.00	1.60	4.00	1.00	0.00
SD	0.00	0.00	1.35	1.00	0.00	0.00

Table 4.7
Years of service mean and standard deviation for value frequency and favorability

	Newcomer Employee		Junior Employee		Senior Employee	
Organizational Value Theme	Freq.	Fav.	Freq.	Fav.	Freq.	Fav.
Safety						
M	3.00	3.00	4.19	4.46	4.37	4.38
SD	0.00	0.00	.90	.58	.71	.69
Respect						
M	4.50	4.00	3.42	3.76	3.25	3.75
SD	.71	0.00	1.42	.89	1.23	1.05
Trust						
M	4.50	3.00	4.00	3.52	3.70	3.83
SD	.71	1.41	1.06	1.29	1.11	1.20
Teamwork/ Cooperation						
M	5.00	4.50	4.15	4.29	4.24	4.32
SD	0.00	.71	1.16	.62	1.07	.78
Education/ Development						
M	3.50	3.50	3.81	4.17	3.54	4.00
SD	.71	.71	1.13	1.01	1.31	.85
Communication						
M	5.00	5.00	4.04	4.05	4.38	4.05
SD	0.00	0.00	.72	1.06	.73	1.06
Customer Satisfaction						
M	4.50	4.50	4.35	3.88	4.17	4.41
SD	.71	.71	.80	1.18	1.04	.67
Decision-making/ Involvement						
M	5.00	4.50	3.77	3.80	3.92	4.18
SD	0.00	.71	.99	1.00	1.12	.95
Environmental Stewardship						
M	1.00	0.00	1.08	5.00	1.54	4.54
SD	0.00	0.00	.39	0.00	1.27	.78

Table 4.8
Analysis of variance value frequency by work shift

Source	df	MS	F
Safety			
Between Group	2	.66	.84
Within Group	101	.79	
Respect			
Between Group	2	1.34	.82
Within Group	101	1.64	
Trust			
Between Group	2	5.87	5.31**
Within Group	101	1.11	
Teamwork			
Between Group	2	1.19	1.02
Within Group	101	1.17	
Development			
Between Group	2	.75	.47
Within Group	101	1.60	
Communication			
Between Group	2	.98	1.84
Within Group	101	.54	
Customer Satisfaction			
Between Group	2	1.73	1.86
Within Group	101	.93	
Decision Making/ Involvement			
Between Group	2	.39	.33
Within Group	101	1.19	
Environmental Stewardship			
Between Group	2	.69	.54
Within Group	101	1.27	

Note. **$p < .05$. *$p < .10$

Table 4.9
Analysis of variance value favorability by work shift

Source	df	MS	F
Safety			
Between Group	2	.28	.62
Within Group	101	.46	
Respect			
Between Group	2	1.63	1.18
Within Group	94	1.39	
Trust			
Between Group	2	.68	.45
Within Group	95	1.51	
Teamwork			
Between Group	2	.13	.22
Within Group	95	.58	
Development			
Between Group	2	.98	1.25
Within Group	88	.78	
Communication			
Between Group	2	1.14	.97
Within Group	101	1.17	
Customer Satisfaction			
Between Group	2	.61	1.38
Within Group	98	.44	
Decision Making/ Involvement			
Between Group	2	.42	.45
Within Group	96	.95	

Note. **p < .05. *p<.10

Table 4.10
Analysis of variance value frequency by work department

Source	df	MS	F
Safety			
Between Group	3	.79	1.34
Within Group	100	.59	
Respect			
Between Group	3	.83	.50
Within Group	100	1.66	
Trust			
Between Group	3	2.19	1.87
Within Group	100	1.17	
Teamwork			
Between Group	3	7.56	7.13**
Within Group	100	1.06	
Development			
Between Group	3	2.08	1.33
Within Group	100	1.57	
Communication			
Between Group	3	1.86	3.67**
Within Group	100	.51	
Customer Satisfaction			
Between Group	3	1.31	1.550
Within Group	100	.84	
Decision Making/ Involvement			
Between Group	3	.86	.72
Within Group	100	1.18	
Environmental Stewardship			
Between Group	3	1.78	1.44
Within Group	100	1.24	

Note. **p < .05. *p<.10

Table 4.11
Analysis of variance value favorability by work department

Source	df	MS	F
Safety			
Between Group	3	.79	1.77
Within Group	100	.44	
Respect			
Between Group	3	.14	.13
Within Group	81	1.04	
Trust			
Between Group	3	.91	.60
Within Group	94	1.51	
Teamwork			
Between Group	3	.46	.83
Within Group	94	.55	
Development			
Between Group	3	.65	.82
Within Group	87	.79	
Communication			
Between Group	3	.29	.24
Within Group	100	1.20	
Customer Satisfaction			
Between Group	3	.45	1.02
Within Group	97	.44	
Decision Making/ Involvement			
Between Group	3	1.06	1.13
Within Group	95	.94	

Note. **p < .05. *p<.10

Table 4.12
Analysis of variance value frequency by job classification

Source	df	MS	F
Safety			
Between Group	5	.19	.30
Within Group	96	.62	
Respect			
Between Group	5	1.22	.73
Within Group	96	1.69	
Trust			
Between Group	5	.87	.72
Within Group	96	1.21	
Teamwork			
Between Group	5	2.09	1.94*
Within Group	96	1.08	
Development			
Between Group	5	2.49	1.61
Within Group	96	1.54	
Communication			
Between Group	5	1.62	3.40**
Within Group	96	.48	
Customer Satisfaction			
Between Group	5	.58	.70
Within Group	96	.84	
Decision Making/ Involvement			
Between Group	5	.55	.45
Within Group	96	1.22	
Environmental Stewardship			
Between Group	5	1.96	1.58
Within Group	96	1.24	

Note. **$p < .05$. *$p < .10$

Table 4.13
Analysis of variance value favorability by job classification

Source	df	MS	F
Safety			
Between Group	5	.21	.46
Within Group	96	.45	
Respect			
Between Group	5	.78	.78
Within Group	80	1.00	
Trust			
Between Group	5	1.07	.70
Within Group	90	1.53	
Teamwork			
Between Group	5	.46	.88
Within Group	90	.53	
Development			
Between Group	5	.48	.60
Within Group	83	.80	
Communication			
Between Group	5	1.50	1.28
Within Group	96	1.17	
Customer Satisfaction			
Between Group	5	.31	.68
Within Group	94	.45	
Decision Making/ Involvement			
Between Group	5	.75	.77
Within Group	91	.97	

Note. **$p < .05$. *$p < .10$

Table 4.14
Analysis of variance value frequency by years of service

Source	df	MS	F
Safety			
Between Group	1	.37	.63
Within Group	100	.58	
Respect			
Between Group	1	.58	.35
Within Group	100	1.65	
Trust			
Between Group	1	1.77	1.48
Within Group	100	1.20	
Teamwork			
Between Group	1	.13	.11
Within Group	100	1.19	
Development			
Between Group	1	1.39	.87
Within Group	100	1.61	
Communication			
Between Group	1	2.28	4.31**
Within Group	100	.53	
Customer Satisfaction			
Between Group	1	.59	.61
Within Group	100	.97	
Decision Making/ Involvement			
Between Group	1	.45	.38
Within Group	100	1.18	
Environmental Stewardship			
Between Group	1	4.14	3.32*
Within Group	100	1.25	

Note. **$p < .05$. *$p < .10$.

Table 4.15
Analysis of variance value favorability by years of service

Source	df	MS	F
Safety			
Between Group	1	.12	.28
Within Group	100	.44	
Respect			
Between Group	1	.92	.95
Within Group	95	.97	
Trust			
Between Group	1	1.79	1.20
Within Group	94	1.49	
Teamwork			
Between Group	1	.01	.02
Within Group	94	.56	
Development			
Between Group	1	.49	.61
Within Group	87	.80	
Communication			
Between Group	1	.55	.46
Within Group	100	1.18	
Customer Satisfaction			
Between Group	1	.12	.26
Within Group	97	.45	
Decision Making/ Involvement			
Between Group	1	2.69	2.88*
Within Group	95	.93	

Note. **$p < .05$. *$p < .10$

Results of Research Questions Three Data Collection

Research Question Three asked if the plant's employees perceived their work culture to be related to their performance outcomes. Interview question twelve directly asked participants if they perceived the mill culture as helping or hurting the plant's performance. This question was tallied for frequency of responses. Ninety-one percent of the respondents perceived that the work culture did help the plant's performance outcomes in terms of safety, labor relations and quality. None of the respondents felt that the culture hurt the mill performance outcomes. Three percent of the respondents perceived that the culture made no difference and six percent of the participants did not know if the culture helped or hurt the mill's performance. The results are recorded in Table 4.16.

Table 4.16
Frequency count of responses to whether the mill's culture had helped or hurt the plant's performance

Response	Number of Occurrences	Percent of Population
Mill culture helped performance	95	91%
Mill culture hurt performance	0	0%
Mill culture made no difference	3	3%
Did not know	6	6%
Total number of responses	**104**	100%

The follow-up question asked participants to explain how culture helped the plant's performance. There was no limit on the number of responses a participant could

give to the question. In many cases, participants listed several reasons for how the culture helped the plant. The responses were content analyzed into categories. The results of the content analysis are presented in Table 4.17.

Table 4.17
Frequency counts of responses to how the mill's culture had helped the plant's performance

Response	Number of Occurrences	Percent of Population
Teamwork	37	30%
Participation	29	24%
Communication activities	24	19%
Union-mgmt relationship	12	9%
Employee selection	7	6%
Education opportunities	7	6%
Leadership	5	4%
Operational processes	3	2%
Total	124	100%

Teamwork had the highest number of occurrences and represented thirty percent of the population's responses. Two themes were present in the interview responses. First, participants often referred to the ability to coordinate action between employees as a source of cultural strength. For example, participant 73 stated:

> The culture has absolutely helped. I think probably in the poor market situation we have been in a couple of times, where we had to switch to domestic plank and go away from our normal cutting patterns. We wanted to be very flexible. People adapted and worked together and made it happen. We got input and set things up. It was always positive, not negative. I don't think you could have done that in a hundred tries at the old mill. It would have caused major chaos.

Participant 26 provided another example of teamwork functioning as coordination. He stated:

> It helps by people working together [refers to mill culture]. For example, I work with six- meter beams. A lot of times when the load is part full, certain sizes take certain amounts of hearts [log heart center]. I'll have no heart on my end but I can't see the far side. The guy on the other side of the chain [pull chain] will let me know if there is a heart or big split or hole. That way I can re-grade the beam and make sure my loads are right.

These examples provide evidence that many participants at the mill perceived that the culture promoted effectiveness by allowing the plant to adapt to needed product changes. Also, many of the examples provided by the participants suggested that safety and quality were enhanced by the crew's ability to work together and help each other complete their tasks.

The second response that was present in the teamwork category was that the mill was a family. Many of the respondents stated that they knew most everyone in the mill. They suggested that the mill was a close knit group and that everyone watched out for each other. They attributed this family atmosphere to the mill's success in safety and labor issues. For example, participant 30 stated, "It's a small operation and pretty much everybody knows each other and that helps promote teamwork, which helps promote quality and productivity. We all work together pretty close. We watch out for each other and keep each other safe." Participant 26 stated, "The mill is like a close family. It's still small enough that you know everyone. I think that helps with safety and quality because we can work together and help each other out."

The category of participation received the second highest amount of occurrences. Participants mentioned participation as a source of cultural effectiveness twenty-nine

times for twenty-four percent of the total responses. The mill's culture was viewed as promoting a work environment that encouraged employees to get involved in the mill processes and help make decisions.

Many examples provided by respondents showed how improvements in safety and quality were made through employee suggestions and involvement. For example, participant 89 discussed how a safety issue at a machine center was resolved with the help of the safety committee. The respondent noted,

> One issue was the green chain kick stop chain. We were getting a lot of slack in the stop chain and it was hard to stop. The safety committee got involved and worked with the pullers to add electronic eyes. It solved the problem.

Participant 39 noted, "Employees are really focused on helping the mill run. We have drivers that will call up on the radio and say that they found lumber off size. We have operators that take it upon themselves to make the right decisions." He further noted, "We don't wait until our coordinator tells us there is something wrong. We are involved in the process, not just part of it."

Communication activities occurred twenty-four times for nineteen percent of the responses. Three categories of responses were present under communication: crew meetings, open door policies with leaders, and safety meetings. Crew meetings were cited eight times as a reason for the culture helping the mill. Thirteen responses cited an open door policy between the mill's leadership and the employees as a reason for how the culture had helped the plant achieve performance outcomes. Three responses cited the monthly safety meeting as key to how the culture promoted safety. For all of these categories, participants reported that the work culture helped the plant by providing

support for avenues for communication and information sharing. Employees were able to receive information and ask questions. Crew and safety meetings also functioned as an opportunity to reinforce critical organization performance needs such as safety and quality expectations.

Union-management relationship was cited as a reason for how the culture helped the mill twelve times for nine percent of the responses. Participants discussed the union-management relationship as a source of culture advantage by reducing negative conflict and providing collaborative solutions to problems. For example, one participant discussed the issues surrounding the weekend shift's floater holiday. Participant 20 remembered:

> The plant's culture has helped especially for union-company relations. As far as third shift goes, we work together on setting holidays. It seems kind of little, but we got Super Bowl Sunday off. The third shift hadn't seen the Super Bowl in years. The union and the company worked together with us on Super Bowl Sunday and we usually come in and work for half of a day and then they let us go home so everyone can watch the game. That's the union and the management working together. Some where else, they would say 'no way, this is your work time and you're going to work.' That's just a small thing but it really helps with attitudes.

Employee selection was discussed seven times for six percent of the total responses. Responses fell into two categories: hiring process and the mentor program. Respondents that discussed the hiring process viewed it as a critical component to the culture. Participant 45 suggested:

> Number one is the selection process. It's not perfect but people have to express a pretty convincing desire to be here and improve themselves before they get a chance. Right there you have a leg up on most other work cultures. Our process is structured and requires a lot out of a candidate. If someone makes it through, they have to be motivated and

> want to be part of the crew. That makes them more likely to do a good job because they want to be here.

Another respondent discussed the mentor program. Participant 69, noted:

> I think the mentoring process is where it all comes together. If someone is going to be part of the team, they have to learn how to work with everyone. The job requires us to be a team and someone that doesn't want to help out won't make it for long. The mentoring process gives us input into the new hires. I think that is why we have gotten some really good people over the years. And it's the people that keep us ahead in safety and quality.

The category of educational opportunities appeared in the interviews seven times for six percent of the total responses. Respondents perceived that the mill's culture supported developing employees and this had an impact on the performance outcomes of the mill. For example participant 29 stated:

> Our culture is unique in that we have opportunities to expand our education. Whether it's going back to school or through our training. We have had speakers into the mill and different classes. This is different than any place I have worked before. I think it helps because people stay motivated; there is always something else to try. You are never stuck.

Another participant noted, "There are a lot of chances for someone to learn and advance in the mill. I think that is something that is different about our plant. Our work environment encourages people to learn as much as possible." The participant continues, "A lot of these guys can work many jobs across the mill. They are cross-trained. That makes us more flexible and people know what the safety and quality issues are at different machine centers. That has to help." These types of comments were characteristic of the perception that education opportunities improved the performance outcomes by increasing the skills of the workforce.

The category of leadership was cited as a reason for how the culture helped the mill's outcomes five times for four percent of the total responses. Leadership reasons fell into two categories: management following through and leaders setting the example. For management following through, three responses were directed at how leaders do what they promise and provide feedback. For example, when participant 9 was asked for examples of how the work culture helped the mill he said:

> Anytime that I've had a problem with my equipment and I've put in a work request or gone to a foreman, it is usually taken care of especially if it has something to do with safety. Even if it's nothing to do with safety, it doesn't take long for it to get done. They stay on top of that stuff. I show them what I would like done and why. If they see a better way of course they'll do it the better way. That is still interacting with us. Management has backed everything up.

This example was representative of the type of messages participants were giving about leadership following through or making sure requests were complete.

Two responses focused on leaders helping the culture by promoting morale. Participant 13's comments were representative of these views. Participant 13 stated:

> My coordinator [supervisor] tells people all the time how well they're doing. He boosts the morale, and I think that is why our shift has a good attitude right now. Sometimes he gives a handshake and says 'Hey, you did a good job. I'm proud of having you on my shift.' I think that is important. It can be a big deal.

Operational processes represented the smallest category with three messages for two percent of the total responses. Two of the responses discussed line stop authority as being representative of the safety culture of the mill. One response discussed the lockout/ tagout program as being important to the safety culture.

Summary of Results

In summary, the value examples of safety, customer satisfaction, and communication were mentioned with high frequency in the interviews. The value of environmental stewardship had a low frequency among participants. Safety and customer satisfaction showed strong agreement among the participants. The values of trust and respect showed the lowest levels of agreement. The analysis of variance showed the null hypothesis that the population means were equal was rejected five times at an alpha risk of .05. For value frequency, trust, teamwork, and communication were statistically significant. For favorability, the value of decision-making/ involvement was statistically significant. The null hypothesis was rejected one time at an alpha risk of .10. The frequency means for environmental stewardship showed statistical significance variation.

For Research Question Three's data collection, ninety-one percent of the participants perceived the culture to be helpful to the plant's performance outcomes. Teamwork was the most often cited reason for how the culture helped the mill. Teamwork, participation, and communication activities accounted for seventy-three percent of the responses given to the question of how the mill's culture helped the plant's performance.

Chapter 5--Discussion

Overview

The purpose of this study was to (1) describe the extent to which core values were shared within the CBX mill, (2) identify any inconsistent values, and (3) assess the extent to which CBX employees perceived that their culture helped or hurt their organization's performance outcomes. Chapter Five provides an integration of the research results to answer each question. A general discussion is included which covers the contributions and limitations of the study, suggested improvements, and recommended further research.

Integration and Implication of Findings

Research question one

The First Research Question asked to what extent were the core values of the culture shared across the CBX mill. The core values of the mill represented the target culture. Shared understanding and agreement of the target culture by the mill's population would represent congruence between management's desired work culture and employee's perceptions of the work culture. In this section, Martin's (1992) conceptual framework of integrated, differentiated, and fragmented is used to assess the strength of culture in terms of shared agreement of the mill's core values.

Martin's (1992) typology of culture consists of integration, differentiation and fragmentation. Each form of culture carries a set of characteristics. For Martin, an integrated culture has consensus of meaning for the key culture elements. Often these elements are organizational values. Not only must these values be interpreted consistently across of the organization but they must also be ones which the employees agree with or approve. Employees must support the values and view them as part of how the organization functions. In summary, the integration approach to work culture emphasizes homogeneity of cultural values across the organization both in terms of shared interpretation and agreement.

In contrast to the integration approach, differentiation and fragmentation provide alternative types of culture. Differentiation is the division of an organization into subgroups or subcultures with different interpretations of culture elements. This approach recognizes that people work in departments, work shifts, specialized occupations, and task groups. These groups through interaction have the opportunity to develop group identification and different perceptions of culture elements. Differentiation occurs as subgroups develop unique interpretations from the larger culture. The fragmentation approach further builds on the notion of culture differences. A fragmented culture has no consistency of culture elements. An organizational value for example, could have multiple interpretations with no identifiable subculture.

The integration approach is characteristic of how CBX viewed its desired target work culture. The mill's leadership chose to actively manage the plant's work culture. They established a set of values that was to characterize the culture and chose human resource practices, which they perceived would support the core values in the plant.

These actions were driven by the assumption that if the mill as a group held these components of culture, the plant's performance would increase. In order for this to be true, employees at all levels would have to understand the key elements of culture and agree that they are important and act upon them.

Based on these assumptions, the integration perspective is an appropriate framework for assessing the extent that the mill's target culture was shared across the plant site population. The scaling of the interview responses through content analysis provided a measure of integration. The frequency scale provided a measure of consistency of employee interpretation for each value. The scale measured the extent that employees knew the values and their intended definitions. Thus it was a measure of consensus of meaning, which is the first element of integration. The favorability scale provided a measure of the extent that employees agreed or approved of a value. This scale measured shared agreement about each value, which is the second element of integration. In summary, these two scales provided a basis for assessing the level of integration present in the CBX mill.

The analysis of variance provided a measure of differentiation within the mill. By stratifying the population into the most likely subcultures, the possible differences in interpretation and agreement for each value were assessable. The analysis of variance also allowed for the assessment of fragmented values. If a value was not present or scattered throughout the mill in no distinct pattern, it could be classified as fragmented.

The statistical analysis shows evidence of integration within the plant's population. (See Table 4.1-4.2 for statistics.) The values of safety and customer satisfaction are highly integrated. These two values exhibit high consensus of meaning

and high favorability. Reviewing the mill total descriptive statistics, the means for both the frequency and favorability scales are above 4.2 for both values. These results indicate on average, employees knew the majority of the culture definitions for safety and customer satisfaction. In addition, they perceived these values as operating positively in the mill. This represents high consensus of interpretation and high agreement. Finally, the values show stability among each stratified grouping as noted by the overall low mean squares for each grouping. This indicates that the values were shared relatively close throughout the mill.

Although not showing quite the same level of shared agreement, the second grouping of values shows indication of integration. The values of respect and education/ development are classified as integrated values at CBX. The values show moderate levels of consistency and agreement.

The analysis of variance found six cases of statistically significant difference among the variation between means of stratified groups. These differences provide support for the argument that parts of the mill were differentiated from the target culture. The values of trust, teamwork, communication, environmental stewardship, and involvement all were found to have significant variation between groups.

For some values the variation found in the analysis of variance was more of a function of strong agreement within a particular group rather than a negative perception of a value. This was the case for the value of trust where work shift variation was characterized by one shift having higher culture knowledge. The opposite was true for teamwork. One department having lower culture knowledge characterized the differences between means.

Analysis of the data showed that the significant variations within any stratified group were in either frequency or favorability scales but not both. Variations in frequency alone could only indicate that groups varied in the amount of culture knowledge that they shared in the interviews. If both frequency and favorability ratings varied significantly among groups then it was possible that a subculture could exist with very different views of a value operating in the culture. No groups yielded significant variation in both frequency and favorability scales.

The value of environmental stewardship did not appear frequently across the plant. The analysis of variance showed that Senior employees discussed the value examples more than Junior employees did. Yet, there was no clear indication that this represented a culture. Only fourteen interviews discussed the value and the participants were spread across the organization. The total average frequency score for the mill was 1.41. This indicated that the value was hardly discussed at all. The favorability scale reported an average score of 4.57. So when the value was discussed, employees viewed it predominantly positively. Based on these results, the value of environmental stewardship is classified as fragmented through the culture.

Clearly, the plant's population did not view the value as part of the culture or fundamental to what it meant to work at the mill. This is not to suggest that the plant did not support environmental needs or meet compliance. The participants that did discuss environmental stewardship often stated that they were either involved in the mill's environmental processes or they had an interest in environmental issues. These participants rated the favorability of the mills very high. The result does indicate that for the average employee, environmental stewardship was not perceived as part of the daily

cultural activities of the mill like safety, teamwork, communication, and customer satisfaction.

In conclusion, CBX showed clear indications that it was an integrated culture in terms of shared agreement and shared culture knowledge. The values of safety and customer satisfaction were strongly shared across the CBX mill. The values of respect and development were shared across the mill and showed moderate integration. The values of teamwork, communication, trust, and involvement all showed characteristics of differentiation but none of these values were significantly interpreted or negatively viewed by the CBX population. As such, these values show low levels of integration within the plant's culture. In the final analysis, the culture of CBX appeared to have congruence between the target culture of the mill and the perceptions of the employees interviewed.

Research question two

The Second Research Question asked if there were any inconsistent values that were in conflict with the target work culture. Although the interviews were predominately positive, a few conflict issues did come up in the interview discussions. The values of communication and trust showed some inconsistency across the culture.

Communication and trust showed up as a key issues in many of the interviews. The mill's target definition of communication included the notions that there be no secrets or hidden agendas and that information would be shared at all levels of the organization. Fundamental to the value of trust was the notion that the information would be provided in an honest and truthful manner. At the time this study was

conducted, CBX was experiencing a serious downturn in their export markets in Japan. There was concern that continued economic problems would lead to job layoffs and shutdown. Ultimately these fears were realized when the mill had to close permanently in January of 1998. Twelve percent of the respondents were concerned that important information about market conditions and the future outlook of the mill was not being shared. For example, participant 4 stated, "There are times when I feel that they [management] aren't telling the whole story. I wonder if they are holding back information." Participant 30 noted, "With the plant being on the edge right now, you feel like they might be holding out on you. Maybe there is more that they aren't telling you."

For some participants, the perception of the absence of information increased the concern over rumors that were floating through the mill. Participant 22 commented, "You hear a lot of rumors that the market is shot and things are going to get worse. I think the company should continue to feed us information and keep us in the loop. I think this would end some of the rumor mill." Participant 3 argued, "I wish things weren't so secretive. I mean they say that they're [they refers to management] not; but I find it hard to believe. I hear people talk and it makes me wonder." The participant goes on to say, "When I hear the rumors and the company isn't saying a whole lot, it makes me suspicious."

For those individuals that discussed the concern, there appeared to be a perceived violation of the value of trust. They perceived that there were secrets or that the company had knowledge that they were not willing to share with the crew. In opposition to this view, many participants suggested that the undercurrent of concern was a natural outcome of the economic situation. For example, participant 88 argued in reference to

the feelings of insecurity in the mill, "I think that's just a general feeling you get when plants aren't running like they should and you have an insecure market." Participant 7 noted, "They [management] might be holding back right now, but I think they want to get all of the information first so there are no rumors or bogus information."

On the other hand, there were many participants who felt that they received plenty of information or they had avenues to get information. For example, participant 16 suggested, "Management is more open here compared to other places I have worked especially about what goes on in the higher up areas. They give you more feedback about what the company is doing." Participant 20 noted, "Our coordinators [supervisors] are real good about following up on questions. If people have issues, they can ask in our daily meetings."

The root issue appeared to be centered on the perception of information exchange. For some employees, there was significant amount of information on the mill's condition relative to the market, and for others there was a need for something more. After reviewing the qualitative evidence and the quantitative scales, one can draw the conclusion that the values of trust and communication were generally viewed positively within the plant.

The values of respect and involvement also showed some inconsistency across the work culture. One theme emerged from the interviews that drew from both the values definitions of respect and involvement. Part of CBX's definition of respect was that all members should be treated equally. CBX's definition of involvement included that all members should have opportunities to participate in mill processes. Some respondents perceived that opportunities to participate in committees and other mill systems were not

granted equally to everyone. Participant 4 argued, "I think they [management] play favorites sometimes, even if they don't mean to. Some people seem to be on all of the committees."

Some participants perceived that the issue was that some people had been on the committees too long. This view was that new members needed to be added to the committees to allow for more participation. For example, participant 22 noted, "There are a lot of committees where people could be rotated through. We have a lot of the same people involved in everything. We need to bring new blood into the process." Participant 12 had a similar comment, "We always have the same core group involved in everything. We need some kind of change, and I don't see that happening around here."

The concern of being treated equally was not limited to participation. A few participants discussed concern for the merit system. They perceived that the merit system allowed for bias even if it was not intended. The view was that management had favorites within the rank and file. They argued that a seniority based system, which would be typical of a union environment, would have been more fair.

Both of the concerns outlined above show issues of respect and to some extent involvement. Although these concerns were shared across the organization, they represented the minority view. Most people did not have these concerns and perceived the situation quite differently. For example, participant 30 noted, "We are always electing people or volunteering for different committees; they are not dominated by certain people. It changes every couple of years and opens the door for someone else, and everybody gets a chance in the limelight."

In conclusion, CBX had a shared work culture but there were some perceptions of difference. In particular there were concerns over issues of communication exchange, trust, and equality in relation to the participant involvement programs. These findings have to be taken in context of the economic situation that was facing the mill. Had the mill not been facing economic difficulty, participants might not have been so concerned about trust and communication. Still these concerns represent a contrast to the target culture, and give reason to believe that there was some inconsistency, at least in terms of perception for certain values.

Research question three

The Third Research Question asked if CBX employees perceived that their culture helped or hurt the mill's success in terms of performance outcomes. Ninety-one percent of the participants in the study reported that the work culture helped the mill performance. No participants felt that the culture hurt or hindered the mill's performance outcomes. Clearly, the work culture of the CBX mill was perceived by the employees to be a positive aspect of their work environment.

Unfortunately, the nature of the interview question does not allow for distinguishing how important culture was perceived to be in relation to other organizational variables. For example, a respondent may have agreed that culture helped the mill's performance, but they may not have specified if culture helped a great deal, or if it was a minor player in a range of variables. This limits the explanatory power of the interview questions. Still, participants often gave clear examples of how the culture helped safety, quality, and employee relations. This provides evidence that culture was

viewed positively and for some participants it was a critical explanation for the plant's success in those key areas.

There were three distinct outcomes that were considered successful by the mill's membership: safety, quality, and labor-relations. How these outcomes were perceived to be related to the culture was indicated in the interview comments. Responses to the questions about how the mill's culture helped performance clustered around three categories: teamwork, participation, and communication. These categories accounted for seventy-three percent of the total responses. Of the three outcomes, safety was discussed the most often with sixty-eight percent of the participants citing safety as a critical performance outcome.

For safety, an emphasis on protecting everyone from injury is present throughout many of the interviews. The culture theme is one of safety awareness. As one of the participants notes, "Our culture has really helped safety. Being safety conscious has made us one of the safest sawmills." That safety consciousness was evident in the way participants discussed teamwork, participation, and communication.

For teamwork, participants discussed safety in terms of watching out for each other. For example, participant 4 noted, "Everyone takes it upon themselves to make sure safety is up to par, and we watch out for each other." Participate 77, an electrician, recalled:

> Safety and dedication to safety is a really big thing here. If you left this room without your hard hat, there would probably be three people reminding you if you continued to walk. A truck driver comes in; somebody will flag somebody down to say that the guy needs a hard hat on. Everybody is watching all the time. It is a group effort.

For participation, employees discussed how they had the opportunity to be involved in the safety process. Employees could participate not only on committees but also in daily decision-making. For example, one supervisor from the sawmill, participant 23, notes:

> We have had many other mills come down and benchmark our safety. They want to come down and see how we do it. They come and they're all excited because they're going to learn the answer. And they walk out disappointed because the answer is the people. We don't do anything tricky, fancy, or amazing. It's the crew and the self-discipline amongst themselves. They take responsibility for safety. If I were solely responsible for safety of this crew or if I had to make all the safety decisions, we would be hurting people all the time. But if they are involved and get to make decisions, they will do it right. It's all about all of us taking on safety and taking responsibility.

Many of the participants shared the same orientation to safety as expressed above. One participant from the sawmill, participant 12 said:

> Here we have a say in safety. Employees are active in safety and everything. If it weren't set up like this, we wouldn't be here. It's the number one reason why we are so safe. We all are taking on safety as part of our job. I'm saying 'we' because that's the way it is. All of us work together all of the time.

Participants talked about communication as a reinforcing mechanism for keeping employees safety conscious. For example, participant 38 stated, "I think it's communication [in reference to the culture and safety]. We get communication on safety every day when we start. Our meetings reinforce it, and it helps keep it in the front of our minds." This comment was representative of the view that daily meetings provided an opportunity to discuss safety issues and a chance to reinforce safety messages.

In summary, the study participants perceived that the mill's work culture was a source of increased performance. Participants cited quality, labor-relations, and safety as perceived outcomes related to culture. Clearly the results suggest that at least certain elements of culture, such as teamwork, may provide some explanation for why the mill was successful in terms of safety, quality, and labor-relations. This study offers a descriptive account of employee perceptions, but it does lead to the conclusion that there could be links between performance and cultural elements. The findings of this study warrant further investigation that could focus on a causal account of the relationships between culture and performance outcomes.

General Discussion

Contributions and limitations of the study

The overarching purpose of this study was to provide the CBX mill with useful information about its' culture as it was perceived by the mill's employees. Although this research focused on meeting a practitioner need, it did contribute to the organizational culture literature. The study develops a method to assess value congruence between target and perceived work cultures. This new method builds upon previous work in culture and climate research. The study adopts the culture perspectives developed by Martin (1992). These perspectives provide a basis for assessing the type of culture of an organization. The frequency and favorability scaling was adopted from the work of Benjamin Schneider, Jill Wheeler, and Jonathan Cox (1992). Reviewing panel interviews with service company employees, the researchers used content analysis to identify the

themes most strongly associated with a service workplace climate. The researchers note that the method could be adapted for organizational culture.

In the literature review, the lack of standardized methods for assessing cultures was identified. This new method adds to the culture literature by providing a quantitative assessment tool that can be used in a variety of organizational settings. Not only can this method be used to test value congruence, but it can also be modified to research other culture variables.

There are limitations that are acknowledged in this study. First, this study was advanced as a description of the CBX work culture. The population for this study was the CBX mill. The methodology and research questions are limited to the organization of study and do not allow for generalization to other cases. Second, this study does not advance a causal argument for the relationship between work culture and performance. The study describes employees' self reported perceptions of culture and its relationship to their performance outcomes. The methodology employed is not suited to cause and effect arguments. Content analysis is a descriptive methodology that allows researchers to only categorize communication content. Finally, the CBX mill permanently shut down operations prior to the completion of this study. Thus, the researcher was unable to share the final results with the plant's employees and leadership. This prevented an opportunity to receive feedback on the results.

Suggested improvements

There are two modifications that would have strengthened this study. First, the question used to answer Research Question Three could have been modified to yield

more descriptive results. The interview question asked if the mill's population perceived that the plant culture helped or hurt the operation in terms of performance outcomes. Performance outcomes were defined as labor-relations, quality, productivity, and safety. The research question could have been answered in more detail if more questions were utilized to draw out which outcomes were considered related to the mill's culture. For example, the question design could have asked if respondents perceived the mill's culture to be related to the plant's safety record. The following question could have asked how the culture helped safety. In this way, the culture of the mill could have been connected to perceived outcomes. This could have been done for each of the performance outcomes. This would have allowed a more detailed discussion of which aspects of the culture were considered helpful for each outcome.

Second, to increase reliability, the coding process could have been done with out the researcher. This would have yielded the highest level of reliability. Due to the complexity of the scales, the researcher chose to be a coder in the process. This helped to reduce the need for training, but it did reduce the strength of the study's reliability.

Recommendations for further study

The results of this study suggest several recommendations for further research. Unfortunately, the CBX mill is not available for follow-up study. If it were available, there are two possible extensions for this case study. First, the results of this study describe the culture both in terms of the company's target vision and the perceptions of the mill's membership. These descriptions provide a picture of the mill's environment but they do not explain how the mill was able to transition from the culture of the old

North Bend mill to the new work culture of the CBX plant. A follow-up study could have addressed how specific work practices like line stop authority or merit rates were perceived to impact the performance of the mill. A second avenue for research could have focused on the culture change process itself. There are a variety of different theories on how cultures can be changed. Many researchers have offered lists of human resource practices that have been associated with successful culture change efforts. The history of the CBX mill offered a case opportunity to look at a complete change effort. The results of this type of study could have tested current theory on culture change processes.

A second avenue for further research could be to explore the culture-performance relationship by expanding the study to look at a several manufacturing facilities. This case study provides evidence to suggest that participants felt that culture did help the mill achieve its performance outcomes. From the case example, there is no causal evidence to suggest that this link actually exists although it seems possible. A larger study could look at several organizations and could compare performance data on safety, productivity, quality, and labor relations with assessments of mill cultures. This type of study could assess if certain mill cultures were associated with higher or lower performance outcomes.

Conclusion

In summary, this study found that the CBX work culture was integrated. This result indicated that employees overall had knowledge and agreed with most of the values of the target culture. Strong agreement was found for safety and customer satisfaction.

The value of environmental stewardship was found to be fragmented across the culture with low agreement. There are some inconsistent values within the interviews. These inconsistencies were characterized by concerns for more communication and a lack of trust. The participants reported strong agreement that the culture helped the mill's performance. All of these results provided evidence that culture may be a variable open to management and that it may have a relationship to performance. Continued research is needed into the specific ways that culture may be managed and how it impacts organizational effectiveness.

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APPENDICES

Appendix A: Request Letter to Study Organization

Sam Dickey, Plant Superintendent
Weyerhaeuser, CBX Sawmill
1170 Newport Dr.
Coos Bay, OR 97420

Dear Mr. Dickey,

I am writing to you in regard to conducting an academic research project with the Weyerhaeuser Coos Bay Export Sawmill. Currently, I am a graduate student at Oregon State University. In addition to course work, this master's degree requires a thesis project. As a former summer employee at CBX, I have always been interested in the employee and management practices that have enabled this plant to be successful. I would like to propose a research project that would case study the Weyerhaeuser CBX operation. The research would focus on work culture of the CBX sawmill.

The proposed methodology could include a survey of CBX employees, interviews with both employees and management, and document analysis where available. . There are numerous culture measuring devices and those selected would be based on availability of resources and time constraints. All survey instruments and general interview questions would be made available to the company, and union if necessary, prior to the beginning of the research. The company, union, and participants would receive complete anonymity during and after the study

I would like to further discuss the possibility of conducting this study with you. I can be reached at (541) 758-4658. I look forward to hearing from you soon.

Sincerely,

Brian Chaney
Oregon State University

Appendix B: Request Letter to Union

Michael L. Cole, President Local W-261
International Association of Machinists
3427 Ash St.
North Bend, OR 97459

Dear Mr. Cole,

I am writing to you in regard to conducting an academic research project with the Weyerhaeuser Coos Bay Export Sawmill. Currently, I am a graduate student at Oregon State University. In addition to course work, this master's degree requires a thesis project. As a former summer employee and union member at CBX, I have always been interested in the employee and management practices that have enabled this plant to be successful. I would like to propose a research project that would case study the Weyerhaeuser CBX operation. The research would focus on work culture of the CBX sawmill

The proposed methodology could include a survey of CBX employees, interviews with both employees and management, and document analysis where available. There are numerous culture measuring devices and those selected would be based on availability of resources and time constraints. The company, union, and participants would receive complete anonymity during and after the study. The names of all participating employees in the study would not be released to any party and appropriate measures would be taken to protect participants' identities in the research findings.

I would like to further discuss the possibility of running this study and look forward to the meeting on January 8.

Sincerely,

Brian K. Chaney
Oregon State University

Appendix C: Participant Response Form

Dear employee,

I am a graduate student at Oregon State University. To complete my education, I am conducting a study of your organization's work culture. The study involves assessing CBX's work environment through interviews with employees. Interview questions will focus on employee perception of training, plant goals, and other aspects of plant life. The purpose of this research is to extend organizational assessment of workplace culture in manufacturing facilities.

You have been selected to participate in this study. The interview will take no more than fifteen minutes during your work shift. Your participation is completely voluntary. If you chose to participate your responses will be kept anonymous and confidential.

Your participation in this project is greatly appreciated. If you participate your coordinator will let you know the precise time and date for your interview in a few days.

Thank you,

Brian Chaney
Oregon State University

Please check and return to your coordinator or the office:

_____ Yes, I will participate in this study

_____ No, I will not be participating in this study

Appendix D: Interview Debriefing Statement

Hello. My name is Brian Chaney. Thank you for meeting today. Before we start the interview, please read this consent form. Your signature indicates that you are willing to participate in this study.

I would like to audiotape this interview session. The tape will be confidential. No one besides the researcher will ever hear this tape. Are you comfortable with the audiotaping of this interview? Are there questions?

A series of questions will be asked about the culture and work environment of this plant. There are no right or wrong answers. You should answer the questions as they fit your experiences. Let's get started.

Appendix E: Participant Informed Consent Form

PARTICIPANT INFORMED CONSENT FORM

Sponsoring Departments at Oregon State University: The Department of Speech Communication, The Department of economics, and The School of Business

Dear Participant,

The practice of protecting human subjects is supported by the sponsoring Departments of this project. The following information is provided so that you can make an informed decision about participation in this research. Your participation is voluntary and you are free to withdraw from this study at anytime without penalty.

The purpose of this research is to extend organizational assessment of workplace culture in manufacturing facilities. This study asks questions about your perception of the work environment at this operation. There are no right or wrong answers. You should answer the questions as they best fit your experiences at this plant. The interview will take no more than 15 minutes to complete.

Statement of Confidentiality: All responses to this interview will be kept anonymous and confidential. You will be assigned a participant code number for the purpose of tracking your response to interview questions with sample demographic information. Only the researcher in this study will read responses that are directly attributed to you. All audiotapes will be erased after transcription of this interview. The researcher will retain your answers to the questions until three years after the end of the study. At that time your answers will be physically destroyed. There is no physical or emotional risks associated with this project and you may benefit from participation by increasing your understanding of your operation's organizational culture.

Your participation in this project is greatly appreciated. If you have any questions about this research or your rights, please contact me.

Sincerely,

Brian Chaney
Shepard Hall
Oregon State University
Corvallis, Oregon 97331-6199
(541) 758-4658

I _____ have read and understand this consent form. I understand my rights and responsibilities, and agree to participate in this research project.

Date: _____

Appendix F: List of Mill Documents Reviewed

1. Coos Bay Export Vision and Value statement
2. Weyerhaeuser Wood Products Vision
3. Coos Bay Export Management philosophy statement
4. Coos Bay Export Employee Expectation Statement
5. Coos Bay Export Organization Survey Results for 1997
6. Employee Individual Development Plans (IDP)
7. Employee Benefits and Introduction Manual
8. Coos Bay Export Hiring and Selection Process Document
9. Mill Job Safety Analysis manuals (JSA)
10. Safety Meeting minutes
11. Mill Training Schedule and Training Modules

Appendix G: Manager Interview Guide

1. In terms of business strategy, what was the purpose of starting the CBX plant?
2. What were your objectives and goals for the CBX mill?
3. Was the organizational culture of the CBX considered in the startup process? How so, any specific examples?
4. Was there a desired or targeted work culture for CBX?
5. How is the work culture managed? Any specific practices or processes? Examples?
6. How would you describe the work culture of the North Bend mill? How is CBX the same or different?
7. What was the approach to managing at the North Bend mill? How is CBX the same or different?
8. What was the labor relations system like at the North Bend mill? How is CBX the same or different?
9. How does CBX compare to other mills in terms of safety, quality, and production?
10. Has the work culture influenced the labor relations system? Safety? Quality? Labor-relations?
11. Has the work culture changed over time?

Appendix H: Mill Interview Guide

1. How long have you worked at CBX?
2. Prior to working at CBX, did you work at other wood products operations?
3. From your experiences working at those other operations, would you say that the work environment at CBX is different? How?
4. What kind of characteristics do you think are important in an employee at CBX?
5. As an employee here, what do you think is expected of you by management?
6. What do your coworkers expect of you? Are there any differences?
7. What kind of information do you get about plant issues? How do you get information?
8. Do labor and management have a productive relationship? In what ways specifically?
9. What do you think are some key objectives or goals to make CBX successful?
10. What is your role in helping CBX be successful?
11. Do you think the plant is a successful operation? Why? Can you give specific examples?
12. Has the mill's work culture helped or hurt the plant's performance? How? Are there any specific examples?
13. Is there anything about CBX that makes you proud to work here? (If not, why?)

Appendix I: Value Coding Taxonomy

Organizational Value	Descriptor
Safety	Safety is the number one priority Safety before production Safety is everyone's responsibility We care about the well being of each other We watch out for each other Housekeeping
Respect	We are all treated equally We treat others with dignity We value all ideas We attach problems, not people
Trust	We are consistent and predictable We are as good as our word We are honest and truthful
Teamwork/ Cooperation	We find constructive ways to resolve conflict We help each other complete tasks We each do our job to the best of our ability
Education/ Development	We will develop our own talents We help each other learn We provide opportunities for education and improvement
Communication	We provide timely and complete information Information is shared at all levels in the organization We follow-up on suggestions and provide feedback There are no secrets or hidden agendas
Customer Satisfaction	We focus on a selected market and customer focus We want to provide the best product in the industry We meet our customer agreements Quality before production Quality is everyone's responsibility We utilize total quality principles
Decision-making/ Involvement	Decisions are made as close to the floor as possible Involvement in mill processes is encouraged through Teams and committees All employees are given opportunities to participate We promote innovation by trying new ideas and suggestions
Environmental Stewardship	Each employee protects the environment We look for opportunities to make the mill more environmentally sound Environmental procedures are followed completely

Appendix J: Calculations

Pearson's product-moment

$$r_{xy} = \frac{\text{Covariance (X,Y)}}{s_x * s_y}$$

One-way analysis of variance

$$F = \frac{n * S_X^2}{S_p^2}$$

Scott's pi

$$Pi = \frac{\text{Proportion observed agreement} - \text{proportion expected agreement}}{1 - \text{proportion expected agreement}}$$

Where:

Proportion observed agreement = $\frac{\text{(number of raters) x (number of same rating made)}}{\text{Total number of ratings by all rater}}$

Proportion expected agreement = Sum of the squared proportions in each category